

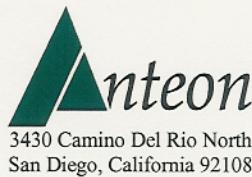
DEPARTMENT OF THE NAVY – NAVFAC SOUTHWEST
Naval Facilities Engineering Command

SEMIANNUAL GROUNDWATER MONITORING REPORT

UST SITE 21478
MARINE CORPS BASE
CAMP PENDLETON, CALIFORNIA

JANUARY 10, 2006

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ACRONYMS AND ABBREVIATIONS

AC/S ES	Assistant Chief of Staff Environmental Security
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
bgs	Below ground surface
COC	Chain-of-Custody
DO	Dissolved Oxygen
DON	Department of Navy
EDF	Electronic Deliverable Format
EPA	Environmental Protection Agency
FP	Free Product
IDW	Investigation-derived waste
LCS	Laboratory Control Sample
MCBCP	Marine Corps Base Camp Pendleton
MCL	Maximum contaminant level
µg/L	micrograms per liter
mg/L	milligrams per liter
MNA	Monitored Natural Attenuation
MSL	Mean sea level
MS/MSD	Matrix Spike/Matrix Spike Duplicate
MW	Monitoring Well
NAVFAC SW	Naval Facilities Engineering Command Southwest
ND	Not detected
ORP	Oxidation Reduction Potential
OW	Observation Well
PAH	Polynuclear Aromatic Hydrocarbons
PPE	Personal Protective Equipment
PWC	Navy Public Works Center San Diego
QA	Quality Assurance
QC	Quality Control
RNA	Remediation by Natural Attenuation
RW	Recovery Well
RWQCB	Regional Water Quality Control Board
SOP	Standard Operating Procedure
SWDIV	Naval Facilities Engineering Command Southwest Division
TPH-d	Total Petroleum Hydrocarbons, diesel range
UST	Underground Storage Tank
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

This report summarizes the results of the most recent groundwater monitoring event at UST Site 21478 Marine Corps Base Camp Pendleton (MCBCP), California, during the first half of 2005. The sampling event was conducted by Anteon Corporation for the Department of the Navy, Naval Facilities Engineering Command Southwest (NAVFAC SW).

The objectives of the site-monitoring program, initiated in 1999, are to assess the current groundwater conditions and monitor natural attenuation.

Groundwater and product levels were measured at the site in all eleven (11) monitoring wells on August 9, 2005. Five wells contained measurable amounts of free product during this event. To assess groundwater conditions, five of the eleven monitoring wells were sampled on August 10 and 11, 2005. Because of the presence of free product, groundwater from one of the wells sampled (OW-01) was analyzed for natural attenuation parameters only.

Based on the fluid level measurements, the elevation of the water surface beneath the site ranged from approximately 5.55 to 7.42 feet above mean sea level (ft msl). The groundwater gradient is directed towards the southwest, with an average magnitude of approximately 0.01.

Groundwater samples were analyzed for several natural attenuation parameters including: alkalinity by Method SM 2320B; nitrate, nitrite, and sulfate by EPA Method 300.0; methane, ethane, and ethylene by RSK-175; magnesium and iron by EPA Method 6010B; ferrous iron by SM 3500; and total sulfide by EPA Method 376.2. Groundwater samples were also analyzed for total petroleum hydrocarbons diesel range (TPH-d) by EPA Method 8015M; benzene, toluene, ethylbenzene, xylenes (BTEX) by EPA Method 8021; and polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8310. Although some free phase hydrocarbons still exist in the subsurface of the site, none of the most recent groundwater samples had any detectable hydrocarbons dissolved in groundwater, and all detection limits were below regulatory reporting limits. Natural attenuation factors continue to suggest that the plume may be in a steady state condition or shrinking as the methanogenic zone moves towards the source area. It is recommended that the groundwater-monitoring program continue on a semi-annual basis and that free product monitoring continue in the five product recovery wells (RW-1, RW-2, OW-1, OW-2, and OW-3).

1.0 INTRODUCTION

This semiannual groundwater monitoring report presents the results of the most recent groundwater monitoring event conducted at Underground Storage Tank (UST) Site 21478 on Marine Corps Base Camp Pendleton, California (MCBCP). The objectives of this report are to assess and describe the following groundwater conditions and remedial activities at the site:

- Measure groundwater and free phase hydrocarbon product levels in site observation wells, recovery wells, and monitoring wells;
- Collect groundwater samples for laboratory analysis;
- Identify variations in water levels and chemical parameters at the site;
- Summarize the trends observed from the individual and collective results of this and previous monitoring events; and
- Monitor natural attenuation of dissolved phase hydrocarbons.

1.1 Scope of Work

The monitoring program at the site includes measuring groundwater and free product levels (if applicable) and collecting groundwater samples from selected wells. Groundwater samples collected during this event were analyzed for the presence of total petroleum hydrocarbons diesel range, (TPH-d); benzene, toluene, ethylbenzene, and xylenes (BTEX); polynuclear aromatic hydrocarbons (PAHs); and various natural attenuation parameters.

1.2 Site Location

UST Site 21478 is located in the southwestern corner of the San Luis Rey drainage basin in the 21 Area of MCBCP (Figure 1-1). The site is covered with natural vegetation and pavement and is underlain by marine and non-marine terrace deposits. The former UST excavation is located in the northeast corner of the site (Figure 1-2). Beyond the southwest edge of the pavement, the ground surface elevation decreases steeply to a point approximately ten feet below the level of the parking lot. This lower terrace slopes gently to the southwest, bounded on the south, west, and southwest sides by additional steep slopes leading to the bottom of a drainage area.

1.3 Site History

Prior to removal, the UST was used to store heating oil for former Building 21478. The Marine Corps removed the tank and associated piping in July of 1994. Brown and Caldwell conducted the initial site investigation to determine the lateral and vertical extent of petroleum hydrocarbon-impacted soil and/or groundwater (Brown and Caldwell, 1996). The Brown and Caldwell investigation indicated that a free-phase hydrocarbon plume was present approximately 190 feet southwest of the former location of the UST and extended approximately 280 feet southwest of the former tank cavity. The U.S. Navy Public Works Center (PWC) initiated free product removal in February of 1996.

OHM Remediation Services Corporation initiated site work in 1997 in accordance with the Final Pilot Test Work Plan/Groundwater Monitoring Plan (SWDIV, 1997). In 1998, passive free product recovery canisters were installed in wells RW-01, OW-01 and OW-02. A bioventing system was also installed to increase the oxygen content in the vadose zone by injecting air into designated wells. Operation of the bioventing system began in January of 1999. Free product removal continued until measurable free product recovery was initially halted in late 2002.

CKY Incorporated assumed the responsibility for groundwater monitoring and operation and maintenance of the bioventing system in July 2000. Maintenance activities included replacement of the bioventing systems blower and controls in July 2001 (CKY, 2002a).

PWC took over the scheduled system operation and maintenance, and groundwater monitoring activities in July 2002. To assess the value of continued operation of the bioventing system, a three month natural attenuation/rebound test was conducted. The system was shutdown on October 25, 2002 at the start of the semiannual respiration test. Additionally, during this period the passive recovery canisters were removed, with the exception of RW-02, so that the equilibrium hydrocarbon distribution at the site could be evaluated with a greater degree of accuracy.

On March 11, 2003, a meeting was conducted to discuss the site history, current status, and future remedial plans for UST Site 21478 (PWC, 2003). Attendees included representatives from PWC, Naval Facilities Engineering Command Southwest Division (SWDIV), MCBCP Assistant Chief of Staff Environmental Security (AC/S ES), and the California Regional Water Quality Control Board (RWQCB). Based on the historical data and site status (oxygen at atmospheric levels in the vadose zone and a stable groundwater plume), all of the attendees agreed that the bioventing system appeared to have reached its limit of effectiveness. In support of this conclusion, the attendees decided that the bioventing system would be permanently shutdown. In addition, the groundwater sampling frequency, number of wells sampled, and analytical suite would be modified. With this change, the remedial action for the site was revised to consist of modified natural attenuation. The RWQCB recommended and approved that the following activities be performed in support of this revised remedy (RWQCB, 2003):

- Continue free product (FP) monitoring and recovery (if possible) in Wells RW-1, RW-2, OW-1, OW-2, and OW-3. Frequency will be on an as needed basis.
- Monitor and sample monitoring wells MW-2, MW-3, MW-4, and RW-3 in April and October. Analyze samples for BTEX (8020), TPH-d (EPA 8015M), PAHs (EPA 8310), NO₃, NO₂, SO₄, (EPA 300.0), sulfide (EPA 376.2), total alkalinity (SM 2320B), methane, ethane, and ethene (RSK 175), total iron (Fe) and manganese (Mn) (EPA 6010B), and ferrous iron (Fe⁺²), and ferric iron (Fe⁺³) (SM 3500).
- Sample OW-1 for NO₃, NO₂, SO₄, (EPA 300.0), sulfide (EPA 376.2), total

alkalinity (SM 2320B), methane, ethane, and ethene (RSK 175), Fe and Mn (EPA 6010B), and Fe^{+2} , and Fe^{+3} (SM 3500). The analytical suite may be trimmed for this well in the future. Analyses will ultimately be based on which geochemical zone the well is located in.

- Submit biannual monitoring and sampling reports (July 15 and January 15).

Free product recovery was reinitiated at the site on June 12, 2003. Because of an increase in free product levels in some of the recovery wells following the April 8, 2003, quarterly sampling event, free product removal activities were implemented on a weekly basis. After one month of weekly removal it appeared that free product levels had stabilized, so the frequency of product removal was decreased to a monthly basis, from July 7, 2003 to February 5, 2004.

To evaluate the rebound ability of the free product and assess plume stability, monthly removal activities were ceased, and bi-weekly fluid level measurements were implemented following the February 5, 2004, event. During this period, free product levels have fluctuated across the site, but have generally showed an increasing trend. Historic free product elevation data is available in Table 1-1. The piezometric surface and hydrocarbon surface trends for wells containing free product are displayed on Hydrographs 2-1 through 2-5. During free product removal activities, a total of approximately 128 gallons of free product and 393 gallons of groundwater have been removed to date from the five wells containing free product.

2.0 FLUID LEVEL MEASUREMENT AND GROUNDWATER SAMPLING

On August 9, 2005, the groundwater and product levels were measured in all eleven (11) wells at the site. Four of the eleven wells were then micro purged and sampled on August 10 and 11, 2005. Well OW-01 was purged with a disposable bailer and sampled on August 11, 2005. Because of the presence of free product, groundwater from well OW-01 was analyzed for natural attenuation parameters only. The results of the monitoring and sampling event are described below.

2.1 Field Measurements

Prior to well-purging activities, the water level was measured in each well relative to a permanently marked survey point. The water level measurements are used to estimate the gradient direction and identify variations of the groundwater table at the site.

The current and historical groundwater elevation measurements are summarized in Table 1-1. The table shows the groundwater levels in wells containing free product corrected to the piezometric surface elevation (using the assumed density of 0.85 and thickness of hydrocarbon present in the well) rather than the elevation of the oil-water interface in each well. During the latest event, the groundwater gradient flow direction was directed to the southwest at a magnitude of approximately 0.01 (Figure 2-1).

Free product was present in five of the eleven wells monitored during this event. Wells containing free product included OW-1, OW-02, OW-03, RW-01, and RW-02. These wells represent the area directly downgradient from the former location of the UST. The greatest measurable thickness of product (3.91 feet) was present in RW-01. The general trend indicates that free product levels have rebounded in wells within the plume area since removal activities were halted in February of 2004. Hydrographs 2-1 through 2-5 show the fluctuation between groundwater and free product levels in wells within the plume area.

2.2 Groundwater Sampling Methodology

All wells sampled for petroleum hydrocarbons, BTEX, and PAHs (MW-02, MW-03, MW-04, and RW-03) were micro purged prior to sampling. Well OW-01, which was sampled for natural attenuation parameters only, was purged with a disposable bailer prior to sampling. Micro purging was performed using a QED Sample Pro, portable low flow bladder pump controlled by a MP15 Control/Power Pack as summarized in Anteon Standard Operating Procedure (SOP) T-002 (available upon request). Field parameters such as groundwater depth, temperature, conductivity, dissolved oxygen (DO), oxidation-reduction potential (ORP), and pH levels were measured using a YSI Groundwater Quality Meter and recorded on the Groundwater Sample Collection Log sheets (Appendix A). After micro purging of each well was completed, groundwater samples were collected in accordance with Anteon SOP T-002.

Following sample collection, the containers were labeled, placed inside two

consecutively sealed plastic bags, and placed in an insulated cooler with wet ice for transport to the laboratory. Samples were sent to Calscience Environmental Laboratory under standard chain-of-custody protocol. The laboratory analytical reports, including copies of the chain-of-custody forms, are provided in Appendix B.

Electronic Deliverable Format (EDF) file sets of the analytical results from this sampling event, along with the final version of this report, were uploaded to the Geotracker website. Geotracker submittal confirmation reports are available in Appendix C. In order to comply with Geotracker data submissions, it was required that the naming convention of the wells be altered to include a two digit well number. For example, monitoring well MW-1 has been renamed MW-01. This new naming convention will continue to be used in both hard copy and electronic submissions to the regulatory agency.

2.3 Groundwater Analytical Results and Interpretation

A summary of the TPH-d, BTEX, and PAH analytical results for groundwater from wells MW-02, MW-03, MW-04, and RW-03 is presented in Table 2-1. No dissolved petroleum hydrocarbons were detected in any of the samples collected. Figure 2-2 shows the analytical results for TPH-d and benzene in groundwater. The results of this sampling event are consistent with the results of previous events. The samples collected were also analyzed for natural attenuation parameters. Analytical results of the natural attenuation parameters are provided in the following section.

Previous analysis of a sample of free product indicates that the product present at the site is composed of hydrocarbons with chain lengths between 9 and 36 carbon atoms long. The current composition encompasses that of diesel fuel and heavy fuel oil. Since petroleum hydrocarbons have not been detected above the reporting limits in any monitoring well not containing free product in the recent past, it would appear that the dissolved phase plume is in a steady-state condition, or possibly retreating upgradient.

3.0 NATURAL ATTENUATION PARAMETER ANALYTICAL RESULTS AND INTERPRETATION

Natural attenuation parameters were measured to assess whether remediation by natural attenuation (RNA) is occurring in the subsurface at UST Site 21478. Natural attenuation includes a number of mechanisms, the most important of which at sites contaminated with fuel range petroleum hydrocarbons is aerobic biodegradation.

3.1 Evaluation of Indicator Parameters

Natural attenuation parameters were monitored in all five of the wells sampled during this event. Indicator parameters analyzed include nitrate, nitrite, sulfate, total alkalinity, methane, ethane, ethylene, manganese, total iron, ferric iron, and total sulfides. Appendix B contains the analytical laboratory reports. Laboratory results of indicator parameters are summarized in Table 3-1. Purge parameters were also used to evaluate natural attenuation. During purging the following field parameters were monitored: pH, temperature, DO content, ORP, turbidity, and conductivity. The results of these analyses are shown in Table 3-2. Most of the parameters have been relatively stable since the last monitoring event. Figure 2-3 shows the results for ORP and DO in groundwater this event.

Outside the plume area, ORP values are positive indicating that oxidizing conditions are present. This suggests that biodegradation may be occurring in the zone containing free product. Methane was not detected in groundwater from wells MW-02, MW-03, and RW-03, and increased in wells MW-04 (56.2 micrograms per liter [$\mu\text{g/L}$]) and OW-01 (7,340 $\mu\text{g/L}$). The long-term trend appears to indicate that methane levels are decreasing in the wells outside of the product plume and remaining elevated in the wells within the product plume. The decreases in methane levels in some of the distal wells may suggest that the methanogenic zone is retreating upgradient towards the source zone and that the dissolved phase plume is shrinking.

Additional indicator parameters including: manganese, total iron, ferrous iron, and total sulfides were analyzed during this sampling event. Manganese was detected in three of the five samples collected. The least detectable amount was found in MW-02 (0.031 milligrams per liter [mg/L]) and the greatest concentration was found in OW-01 (10.4 mg/L). General trends are consistent with predictable geochemical changes in concentrations as distance increases downgradient from the source zone. Iron was not detected in three of the five wells sampled. Iron was detected in groundwater from well MW-03 at 0.232 mg/L and in OW-01 at 18.3 mg/L. This is consistent with expected trace metals concentrations which should peak near the source zone and steeply decline downgradient. Ferrous iron was detected in water from well OW-01 (14 mg/L). Total Sulfide was not detected in groundwater from four of the five wells sampled this event. Alkalinity and sulfate levels have remained relatively stable or have risen both temporally and areally during this sampling event. All other chemistry and purge parameters monitored during this sampling event were consistent with past levels and/or trends. Historic natural attenuation analytical results are available in Appendix D.

4.0 DATA QUALITY REVIEW

This section summarizes the Quality Assurance/Quality Control (QA/QC) review for analytical data generated during the August 2005 groundwater monitoring event at UST Site 21478, MCBCP.

The evaluation was based on verification of sample integrity (i.e., preservation, storage, and holding times), and precision and accuracy data as measured by quality control parameters such as laboratory control samples (LCS), matrix spikes and matrix spike duplicates (MS/MSD), surrogate spikes, and internal standards (where applicable). In addition, results from equipment blanks and method blanks were evaluated to assess the possibility of external contamination of environmental samples during field and laboratory activities. All analyses listed below were performed by a California-certified laboratory (Calscience Environmental Laboratory, Inc.) using accepted laboratory procedures in accordance with their specified analytical protocols. In general, quality control criteria were met for all parameters except as discussed in the following sections.

4.1 VOCs (BTEX) by EPA Method 8021B

Four groundwater samples, one equipment blank, two trip blanks, and one field blank were analyzed for BTEX by EPA Method 8021B. Benzene, toluene, ethylbenzene, and total xylenes were detected in an equipment blank associated with samples collected on August 10, 2005. Benzene and toluene results were qualified with non-detect "U" for results at the reporting limit in associated samples. Additionally, the toluene, ethylbenzene, and total xylene results for sample 21478-RW3 and the total xylene result for sample 21478-MW4 were qualified as non-detect "U". With the exception of MS/MSD percent recoveries for some of the analytes, all other quality control samples were within the laboratory control limits.

4.2 PAHs by EPA Method 8310

Four groundwater samples, one equipment blank, and one field blank were analyzed for PAHs by EPA Method 8310. No target analytes were detected in any of the associated blanks (field and laboratory blanks). No problems were encountered during the review of this analyte-group. All quality control samples were within the laboratory control limits.

4.3 TPH Diesel by EPA Method 8015M

Four groundwater samples, one equipment blank, and one field blank were analyzed for TPH-d by EPA Method 8015M. No target analytes were detected in any of the associated blanks (field and laboratory blanks).

4.4 Dissolved Gases by EPA Method RSK-175

Five groundwater samples, one equipment blank, and one field blank were analyzed for dissolved gases (ethane, ethane, and methane) by EPA Method RSK-175. No target analytes were detected in any of the associated blanks (field and laboratory). All quality control sample results were within the laboratory acceptance criteria for this method.

4.5 Nitrite, Nitrate, Sulfate by EPA Method 300/Alkalinity by SM 2320B/ Total Sulfide by EPA Method 376.2

Five groundwater samples, one equipment blank, and one field blank were analyzed for nitrite, nitrate, and sulfate by EPA Method 300. The same samples were also analyzed for alkalinity by SM 2320B. Manganese and sulfate was reported in an equipment blank associated with samples collected on August 10, 2005. Manganese result in one sample (21478-MW2) was qualified with a non-detect "U". Sulfate results reported in the samples associated with the equipment blank did not need qualification since concentrations were higher than five times the blank concentration. All quality control sample results were within the laboratory acceptance criteria for the specified methods.

4.6 Manganese and Iron by EPA Method 6010B/Iron (II) by SM 3500

Five groundwater samples, one field blank, and one equipment blank were analyzed for manganese and iron by EPA Method 6010B and ferrous iron by SM 3500. All quality control sample results were within the laboratory acceptance criteria for the specified methods.

4.7 Data Usability

Field and laboratory QC elements were assessed for conformance with generally accepted QA standards. The data presented herein are considered valid and usable as indicated by their specific qualifiers. A thorough review of the data indicates that no discrepancies were encountered that would adversely affect the quality, validity, usability, and overall conclusions presented in this report.

5.0 WASTE MANAGEMENT

Wastes generated during groundwater monitoring, micro purging, and sampling, along with decontamination water solutions used for equipment cleaning were handled as follows:

- Equipment decontamination wash water solutions and groundwater generated from monitoring well micro purging and groundwater sampling were transported to Naval Air Station North Island Industrial Waste Treatment facility in San Diego, California.
- Non-hazardous solid waste, such as personal protective equipment (PPE) and plastic used during sampling, was bagged and disposed of as solid waste with other trash generated at MCBCP.

The waste acceptance form is included in Appendix E.

6.0 CONCLUSIONS

The following conclusions are based on the latest and historical groundwater and free product level measurements, and laboratory analytical results for UST Site 21478.

- The groundwater gradient and water level measurements are consistent with past monitoring events.
- The general trend indicates that free phase hydrocarbon concentrations have rebounded in some of the wells within the plume area since free product removal activities were discontinued.
- Both the hydrocarbon concentrations and natural attenuation parameters in groundwater indicate that the dissolved phase plume appears to be in a steady state condition or shrinking.

7.0 RECOMMENDATIONS

- Continue groundwater monitoring and sampling on a semiannual basis (April and October), with reports to be submitted in July and January.
- Perform free product monitoring and recovery activities for wells RW-1, RW-2, OW-1, OW-2, and OW-3. Frequency and duration will be determined on an as needed basis.

8.0 REFERENCES

B&C, 1996: see Brown and Caldwell, 1996

Brown and Caldwell, 1996, *Final Site Assessment Report*, Underground Storage Tank Site 21478, Marine Corps Base Camp Pendleton, California, March.

CKY, 2002a, *Groundwater Monitoring Annual Summary Report for 2001*, UST Site 21478 Marine Corps Base Camp Pendleton, California, January.

CKY, 2002b, *Groundwater Monitoring Report first Quarter 2002*, UST Site 21478 Marine Corps Base Camp Pendleton, California, April.

County of San Diego, Department of Environmental Heath, 2004, *Site Assessment and Mitigation (SAM) Manual*.

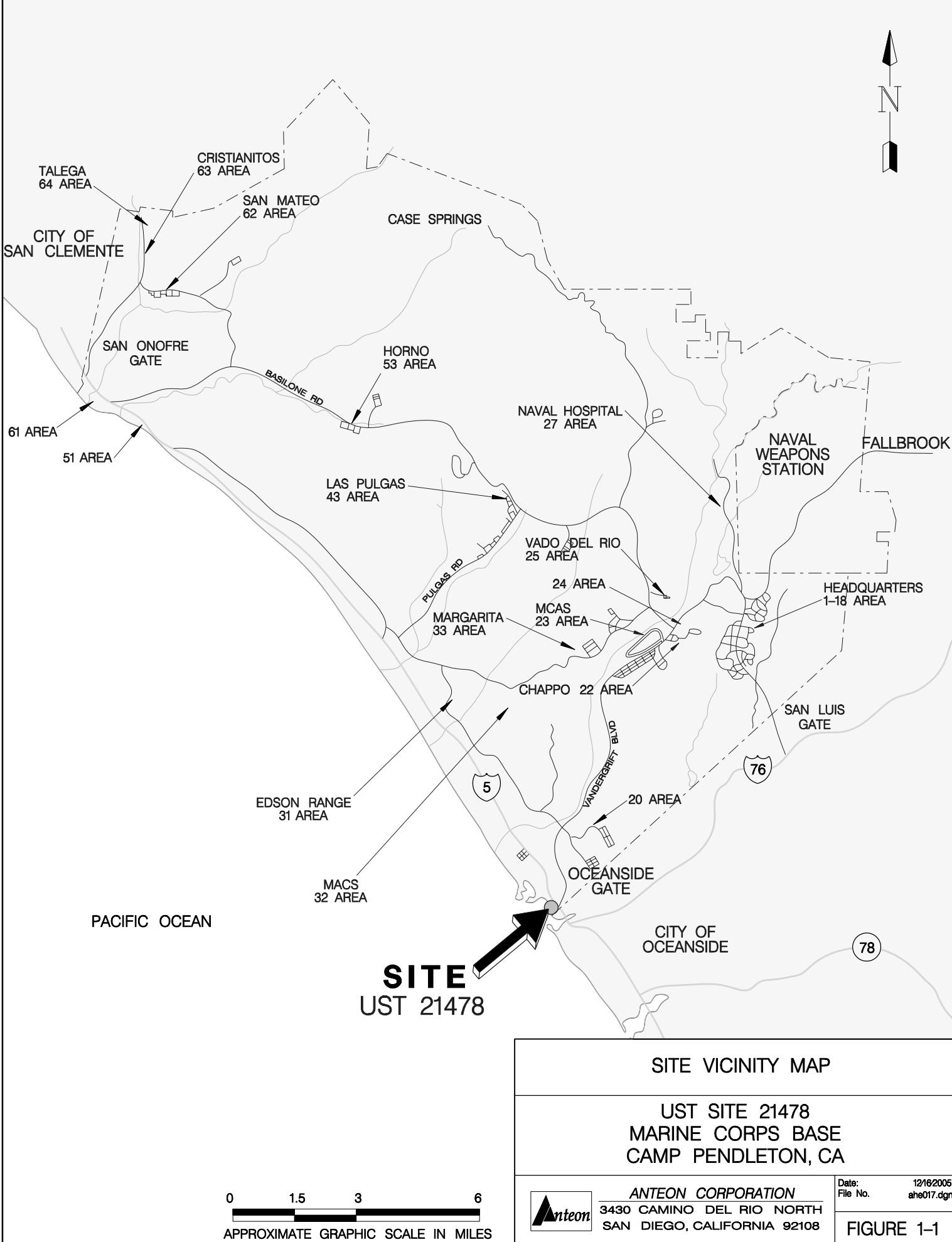
PWC, 2003 *Memorandum Recommending a Revision of the Remedial Action*, March 13

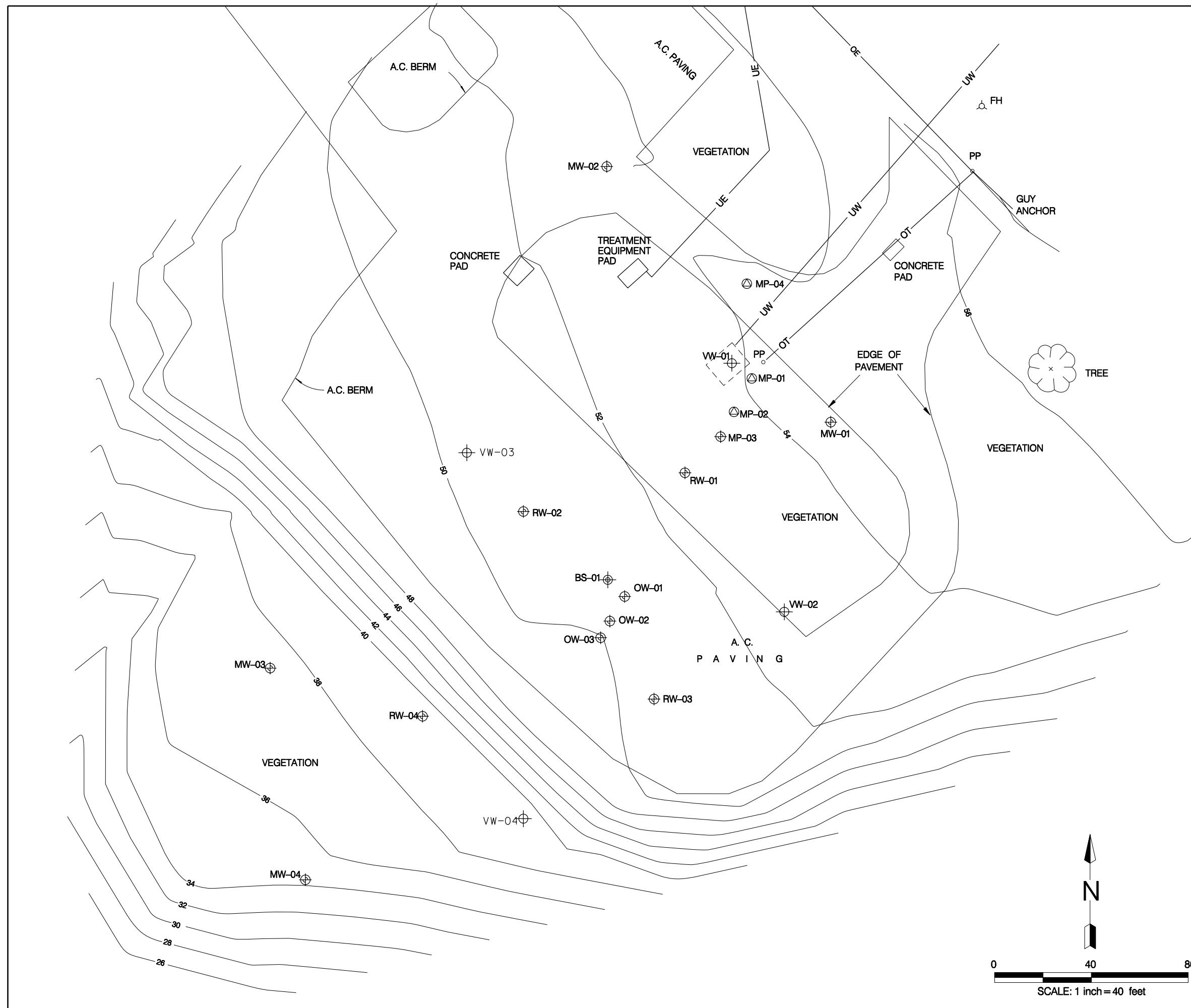
RWQCB, 2003, *Letter Discussing Recommended Changes to the Remedy*, March 25, 2003.

Southwest Division Naval Facilities Engineering Command, 1997, *Final Pilot Test Work Plan / Groundwater Monitoring Plan*, Prepared by OHM Remediation Services Corp., July

SWDIV, 1997: see Southwest Division Facilities Engineering Command, 1997

FIGURES





NOTES

1) DRAWING SOURCE:
MODIFIED FROM OHM REMEDIATION SERVICES MARINE
CORPS BASE, CAMP PENDLETON, CALIFORNIA, SEMIANNUAL
GROUNDWATER MONITORING REPORT - 1ST AND 2ND
QUARTERS 2000 UST SITE 21478, JULY 2000, DWG. NO. 2-1

SITE PLAN

UST SITE 21478
MARINE CORPS BASE
CAMP PENDLETON, CA

Date: 12/22/2005
File No. csh003.dgn

FIGURE 1-2

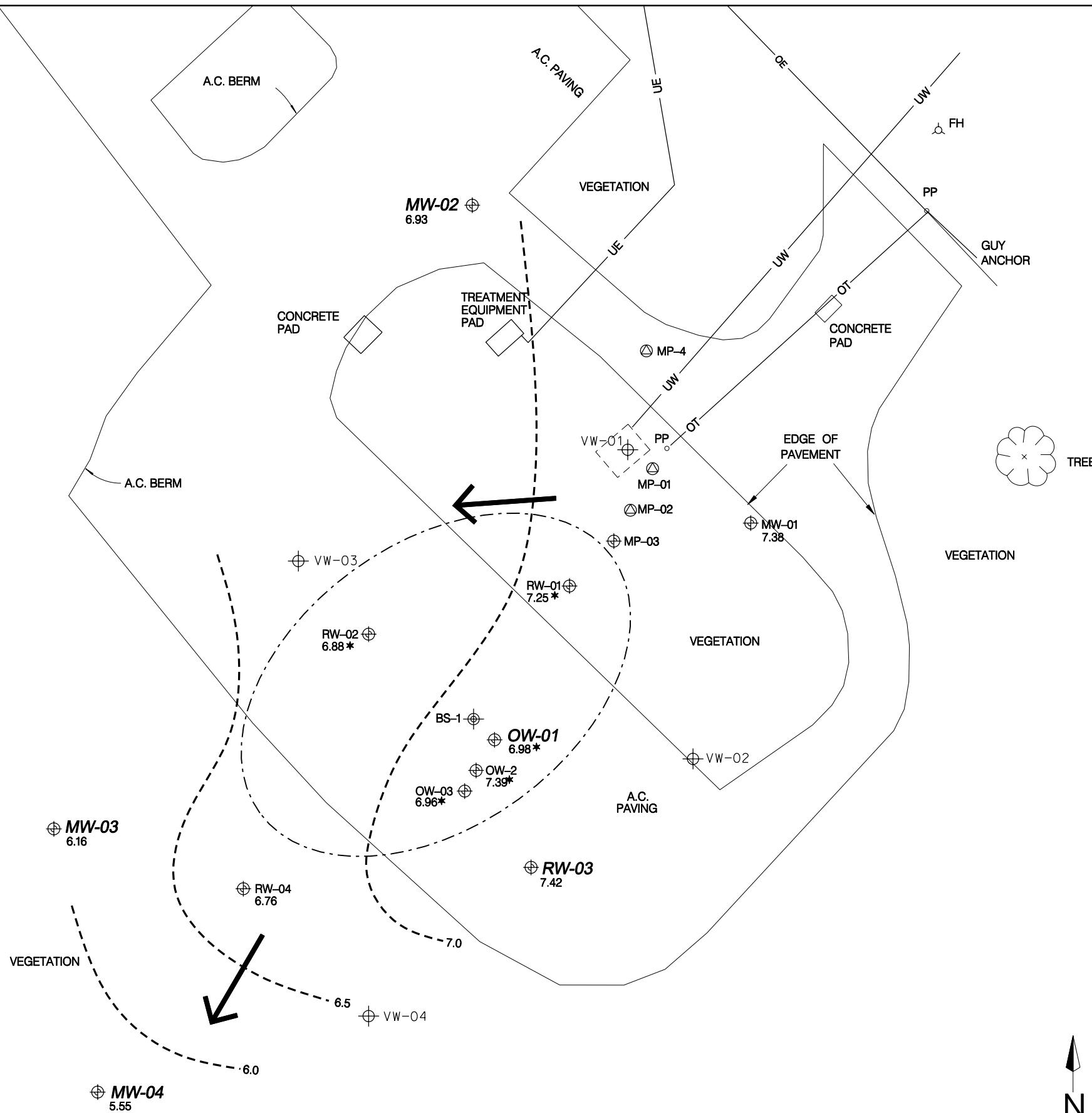
0 40

SCALE: 1 inch = 40 feet

ANTEON CORPORATION
3430 CAMINO DEL RIO NORTH
SAN DIEGO, CALIFORNIA 92108

FIGURE 1-2

FIGURE 1-2



LEGEND

MW-01	GROUNDWATER MONITORING WELL
RW-01	PRODUCT RECOVERY WELL
OW-01	OBSERVATION WELL WITH GROUNDWATER ELEVATION (FEET, MEAN SEA LEVEL)
6.59	APPROXIMATE GROUNDWATER LEVEL ELEVATION HAS BEEN CORRECTED FOR PRESENCE OF FREE PRODUCT AND WAS NOT USED FOR CONTOURING
VW-01	VAPOR RECOVERY WELL /VENT WELL
MP-01	VADOSE ZONE MONITORING POINT
6.59*	APPROXIMATE GROUNDWATER LEVEL ELEVATION HAS BEEN CORRECTED FOR PRESENCE OF FREE PRODUCT AND WAS NOT USED FOR CONTOURING
(---)	APPROXIMATE LATERAL EXTENT OF FREE PRODUCT
←	GROUNDWATER GRADIENT DIRECTION
[—]	APPROXIMATE LIMIT OF TANK EXCAVATION
PP ◊	POWER POLE
FH ↗	FIRE HYDRANT
A.C.	ASPHALT CONCRETE
—	GROUNDWATER ELEVATION CONTOUR (MSL) CONTOUR INTERVAL 0.5 FOOT
-OE-	OVERHEAD ELECTRIC
-OT-	OVERHEAD TELEPHONE
-UE-	UNDERGROUND ELECTRIC
-UW-	UNDERGROUND WATER

NOTES

- 1) MONITORING WELLS IN BOLD WERE SAMPLED THIS EVENT.
- 2) DRAWING SOURCE:
MODIFIED FROM OHM REMEDIATION SERVICES MARINE CORPS BASE, CAMP PENDLETON, CALIFORNIA, SEMIANNUAL GROUNDWATER MONITORING REPORT - 1ST AND 2ND QUARTERS 2000 UST SITE 21478, JULY 2000, DWG. NO 2-1

GROUNDWATER ELEVATION CONTOURS AUGUST, 2005

UST SITE 21478
MARINE CORPS BASE
CAMP PENDLETON, CA

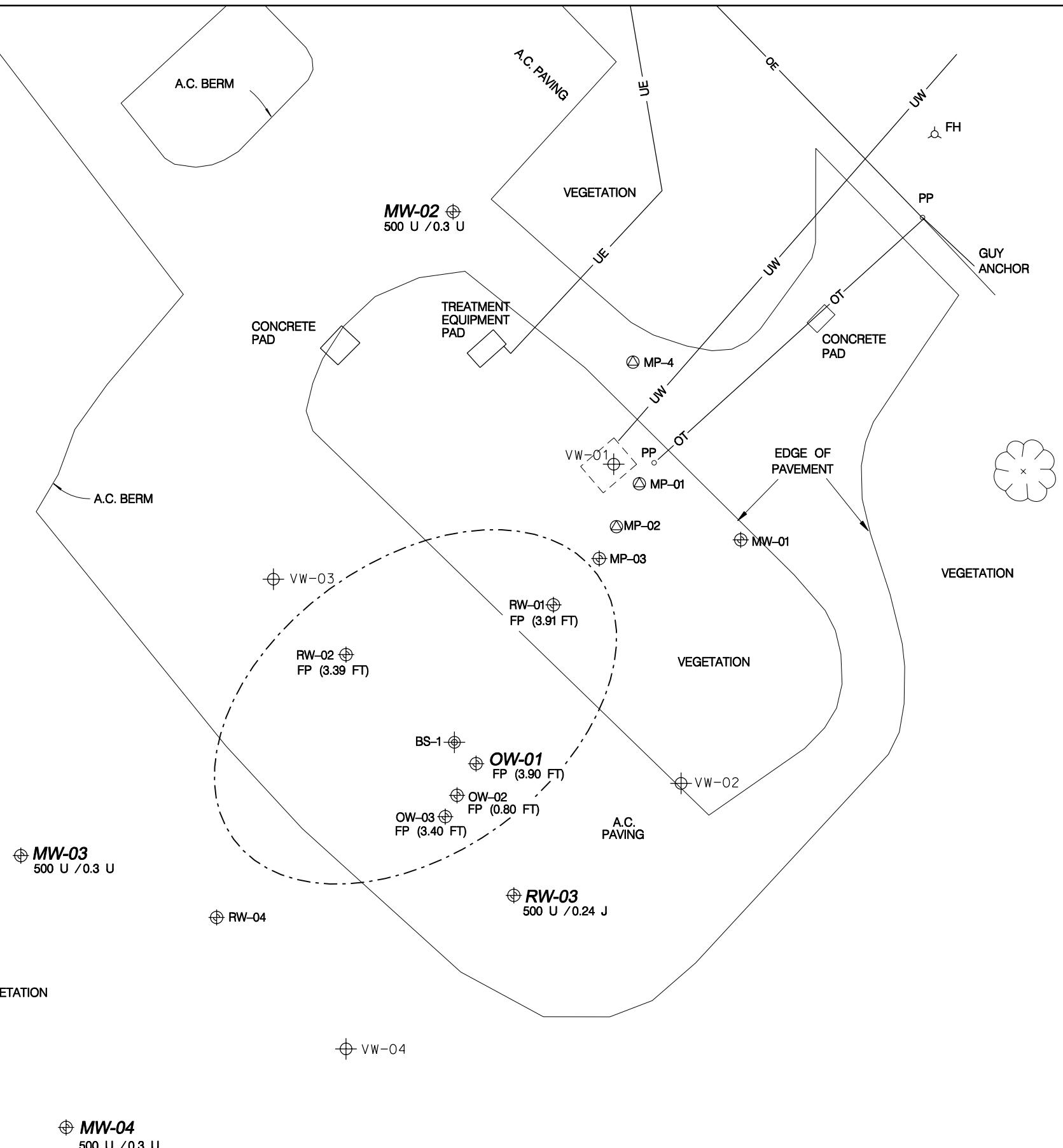
0 40 80
SCALE: 1 inch=40 feet



ANTEON CORPORATION
3430 CAMINO DEL RIO NORTH
SAN DIEGO, CALIFORNIA 92108

Date: 1/4/2006
File No. ahe019.dgn

FIGURE 2-1



LEGEND

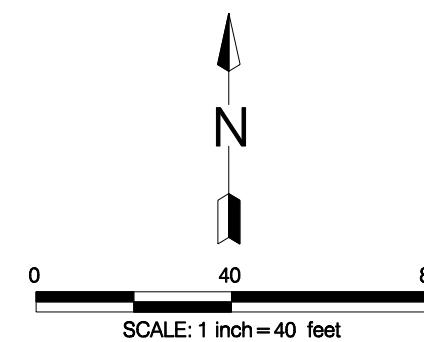
TPH-DIESEL CONCENTRATION (ug/L) IN GROUNDWATER
500 U / 0.3 U BENZENE CONCENTRATION (ug/L) IN GROUNDWATER
FP (3.91 FT) DESIGNATES FREE PRODUCT IN WELL AND THICKNESS
U NOT DETECTED
J ESTIMATED VALUE
TPH-D TOTAL PETROLEUM HYDROCARBONS AS DIESEL
ug /L MICROGRAMS PER LITER
MW-01 \oplus GROUNDWATER MONITORING WELL
RW-01 PRODUCT RECOVERY WELL
OW-01 OBSERVATION WELL
VW-01 \oplus VAPOR RECOVERY WELL /VENT WELL
MP-01 \circlearrowleft VADOSE ZONE MONITORING POINT
() APPROXIMATE LATERAL EXTENT OF FREE PRODUCT
(- - -) APPROXIMATE LIMIT OF TANK EXCAVATION
PP \circ POWER POLE
FH \triangle FIRE HYDRANT
A.C. ASPHALT CONCRETE
-OE- OVERHEAD ELECTRIC
-OT- OVERHEAD TELEPHONE
-UE- UNDERGROUND ELECTRIC
-UW- UNDERGROUND WATER

NOTES

- 1) MONITORING WELLS IN BOLD WERE SAMPLED THIS EVENT.
- 2) DRAWING SOURCE:
MODIFIED FROM OHM REMEDIATION SERVICES MARINE CORPS BASE, CAMP PENDLETON, CALIFORNIA, SEMIANNUAL GROUNDWATER MONITORING REPORT – 1ST AND 2ND QUARTERS 2000 UST SITE 21478, JULY 2000, DWG. NO 2-1

TPH-DIESEL AND BENZENE IN GROUNDWATER
AUGUST, 2005

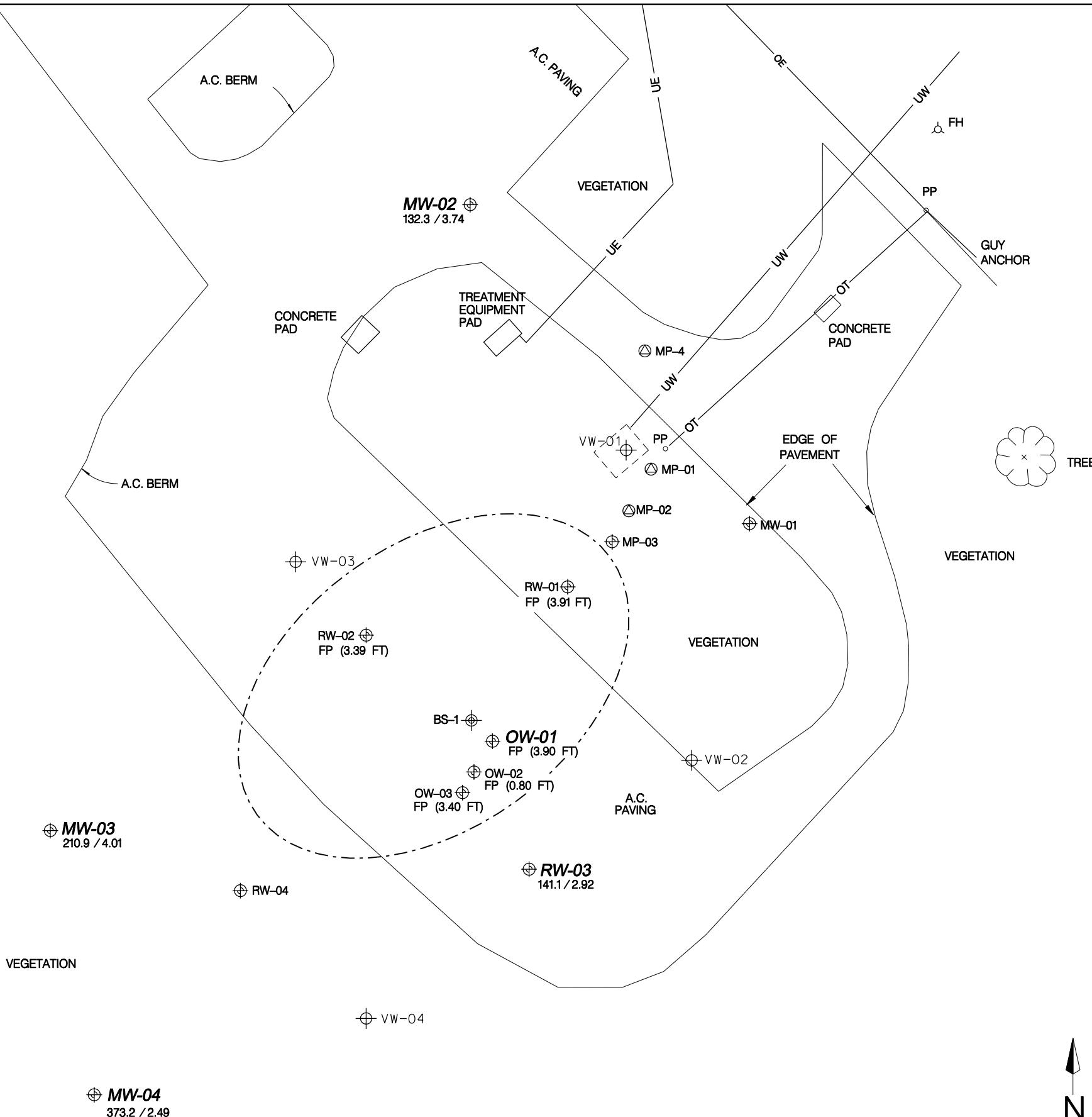
UST SITE 21478
MARINE CORPS BASE
CAMP PENDLETON, CA



ANTEON CORPORATION
3430 CAMINO DEL RIO NORTH
SAN DIEGO, CALIFORNIA 92108

Date: 1/4/2006
File No. ahe020.dgn

FIGURE 2-2



LEGEND

132.3 / 3.74	ORP (mV) IN GROUNDWATER
132.3 / 3.74	DISSOLVED OXYGEN (mg /L) IN GROUNDWATER
FP (3.91 FT)	DESIGNS FREE PRODUCT IN WELL AND THICKNESS
ORP	OXYGEN REDUCTION POTENTIAL
mV	MILLIVOLTS
mg /L	MILLIGRAMS PER LITER
MW-01	GROUNDWATER MONITORING WELL
RW-01	PRODUCT RECOVERY WELL
OW-01	OBSERVATION WELL
VW-01	VAPOR RECOVERY WELL /VENT WELL
MP-01	VADOSE ZONE MONITORING POINT
(-)	APPROXIMATE LATERAL EXTENT OF FREE PRODUCT
(- - -)	APPROXIMATE LIMIT OF TANK EXCAVATION
PP o	POWER POLE
FH o	FIRE HYDRANT
A.C.	ASPHALT CONCRETE
-OE-	OVERHEAD ELECTRIC
-OT-	OVERHEAD TELEPHONE
-UE-	UNDERGROUND ELECTRIC
-UW-	UNDERGROUND WATER

NOTES

- 1) MONITORING WELLS IN BOLD WERE SAMPLED THIS EVENT.
- 2) DRAWING SOURCE:
MODIFIED FROM OHM REMEDIATION SERVICES MARINE CORPS BASE, CAMP PENDLETON, CALIFORNIA, SEMIANNUAL GROUNDWATER MONITORING REPORT - 1ST AND 2ND QUARTERS 2000 UST SITE 21478, JULY 2000, DWG. NO 2-1

LEVELS OF ORP AND DISSOLVED OXYGEN AUGUST, 2005

UST SITE 21478
MARINE CORPS BASE
CAMP PENDLETON, CA

0 40 80
SCALE: 1 inch=40 feet



ANTEON CORPORATION
3430 CAMINO DEL RIO NORTH
SAN DIEGO, CALIFORNIA 92108

Date: 1/4/2006
File No. ahe021.dgn

FIGURE 2-3

TABLES

TABLE 1-1
HISTORIC GROUNDWATER AND FREE-PRODUCT ELEVATION DATA,
UST SITE 21478,
MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA

Measurement Date	Geotracker Well ID	RPE (ft MSL)	Product Depth (ft)	Product Elevation (ft MSL)	Groundwater Depth (ft)	Fuel Thickness (ft)	Corrected Hydraulic Head Elevation (ft MSL)
3/5/1998	MW-01	54.71			47.51	NA	7.20
4/27/1998	MW-01	54.71			47.72	NA	6.99
8/4/1998	MW-01	54.71			47.74	NA	6.97
11/3/1998	MW-01	54.71			47.56	NA	7.15
2/24/1999	MW-01	54.71			48.01	NA	6.70
4/27/1999	MW-01	54.71			48.06	NA	6.65
8/9/1999	MW-01	54.71			48.12	NA	6.59
10/25/1999	MW-01	54.71			48.17	NA	6.54
2/21/2000	MW-01	54.71			48.18	NA	6.53
5/15/2000	MW-01	54.71			48.36	NA	6.35
8/21/2000	MW-01	54.71			48.19	NA	6.52
10/27/2000	MW-01	54.71			48.12	NA	6.59
2/16/2001	MW-01	54.71			47.89	NA	6.82
4/6/2001	MW-01	54.71			47.88	NA	6.83
8/24/2001	MW-01	54.71			47.91	NA	6.80
10/26/2001	MW-01	54.71			47.92	NA	6.79
2/9/2002	MW-01	54.71			48.10	NA	6.61
4/6/2002	MW-01	54.71			48.24	NA	6.47
8/8/2002	MW-01	54.71			48.26	NA	6.45
10/16/2002	MW-01	54.71			48.15	NA	6.56
2/4/2003	MW-01	54.71			48.00	NA	6.71
4/7/2003	MW-01	54.71			48.00	NA	6.71
10/7/2003	MW-01	54.71			47.83	NA	6.88
4/9/2004	MW-01	54.71			48.02	NA	6.69
10/5/2004	MW-01	54.71			48.12	NA	6.59
8/9/2005	MW-01	54.71			47.33	NA	7.38
3/5/1998	MW-02	52.47			45.66	NA	6.81
4/27/1998	MW-02	52.47			45.82	NA	6.65
8/4/1998	MW-02	52.47			45.84	NA	6.63
11/3/1998	MW-02	52.47			44.73	NA	7.74
2/24/1999	MW-02	52.47			48.01	NA	4.46
4/27/1999	MW-02	52.47			48.06	NA	4.41
8/9/1999	MW-02	52.47			48.12	NA	4.35
10/25/1999	MW-02	52.47			48.17	NA	4.30
2/21/2000	MW-02	52.47			46.28	NA	6.19
5/15/2000	MW-02	52.47			46.28	NA	6.19
8/21/2000	MW-02	52.47			46.35	NA	6.12
10/27/2000	MW-02	52.47			46.22	NA	6.25
2/16/2001	MW-02	52.47			46.09	NA	6.38
4/6/2001	MW-02	52.47			46.02	NA	6.45
8/24/2001	MW-02	52.47			46.02	NA	6.45
10/26/2001	MW-02	52.47			46.07	NA	6.40
2/9/2002	MW-02	52.47			46.10	NA	6.37
4/6/2002	MW-02	52.47			46.35	NA	6.12
8/8/2002	MW-02	52.47			46.35	NA	6.12
10/16/2002	MW-02	52.47			46.26	NA	6.21
2/4/2003	MW-02	52.47			46.08	NA	6.39
4/7/2003	MW-02	52.47			45.13	NA	7.34
10/7/2003	MW-02	52.47			45.96	NA	6.51
4/9/2004	MW-02	52.47			46.23	NA	6.24
10/5/2004	MW-02	52.47			46.24	NA	6.23
8/9/2005	MW-02	52.47			45.54	NA	6.93
3/5/1998	MW-03	37.44			31.18	NA	6.26
4/27/1998	MW-03	37.44			31.31	NA	6.13
8/5/1998	MW-03	37.44			31.56	NA	5.88
11/3/1998	MW-03	37.44			31.71	NA	5.73
2/24/1999	MW-03	37.44			32.42	NA	5.02

TABLE 1-1
HISTORIC GROUNDWATER AND FREE-PRODUCT ELEVATION DATA,
UST SITE 21478,
MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA

Measurement Date	Geotracker Well ID	RPE (ft MSL)	Product Depth (ft)	Product Elevation (ft MSL)	Groundwater Depth (ft)	Fuel Thickness (ft)	Corrected Hydraulic Head Elevation (ft MSL)
4/27/1999	MW-03	37.44			32.34	NA	5.10
8/9/1999	MW-03	37.44			32.29	NA	5.15
10/25/1999	MW-03	37.44			32.12	NA	5.32
2/21/2000	MW-03	37.44			32.25	NA	5.19
5/15/2000	MW-03	37.44			32.38	NA	5.06
8/21/2000	MW-03	37.44			32.46	NA	4.98
10/27/2000	MW-03	37.44			32.11	NA	5.33
2/16/2001	MW-03	37.44			32.07	NA	5.37
4/6/2001	MW-03	37.44			31.80	NA	5.64
8/24/2001	MW-03	37.44			31.83	NA	5.61
10/26/2001	MW-03	37.44			32.04	NA	5.40
2/9/2002	MW-03	37.44			31.96	NA	5.48
4/6/2002	MW-03	37.44			32.16	NA	5.28
8/8/2002	MW-03	37.44			32.35	NA	5.09
10/16/2002	MW-03	37.44			32.07	NA	5.37
2/4/2003	MW-03	37.44			31.77	NA	5.67
4/7/2003	MW-03	37.44			31.71	NA	5.73
10/7/2003	MW-03	37.44			31.70	NA	5.74
4/9/2004	MW-03	37.44			32.26	NA	5.18
10/5/2004	MW-03	37.44			32.20	NA	5.24
8/9/2005	MW-03	37.44			31.28	NA	6.16
3/5/1998	MW-04	34.41			28.83	NA	5.58
4/27/1998	MW-04	34.41			29.01	NA	5.40
8/5/1998	MW-04	34.41			29.02	NA	5.39
11/3/1998	MW-04	34.41			29.39	NA	5.02
2/24/1999	MW-04	34.41			30.15	NA	4.26
4/27/1999	MW-04	34.41			29.28	NA	5.13
8/9/1999	MW-04	34.41			29.61	NA	4.80
10/25/1999	MW-04	34.41			29.54	NA	4.87
2/21/2000	MW-04	34.41			29.42	NA	4.99
5/15/2000	MW-04	34.41			29.42	NA	4.99
8/21/2000	MW-04	34.41			29.98	NA	4.43
10/27/2000	MW-04	34.41			29.26	NA	5.15
2/16/2001	MW-04	34.41			29.52	NA	4.89
4/6/2001	MW-04	34.41			29.24	NA	5.17
8/24/2001	MW-04	34.41			29.12	NA	5.29
10/26/2001	MW-04	34.41			29.37	NA	5.04
2/9/2002	MW-04	34.41			29.14	NA	5.27
4/6/2002	MW-04	34.41			29.65	NA	4.76
8/8/2002	MW-04	34.41			29.93	NA	4.48
10/16/2002	MW-04	34.41			29.45	NA	4.96
2/4/2003	MW-04	34.41			29.08	NA	5.33
4/7/2003	MW-04	34.41			29.68	NA	4.73
10/7/2003	MW-04	34.41			29.03	NA	5.38
4/9/2004	MW-04	34.41			29.91	NA	4.50
10/5/2004	MW-04	34.41			29.49	NA	4.92
8/9/2005	MW-04	34.41			28.86	NA	5.55
3/5/1998	OW-01	50.36	43.11	7.25	45.22	2.11	6.93
3/6/1998	OW-01	50.36	43.35	7.01	45.18	1.83	6.74
3/19/1998	OW-01	50.36	43.12	7.24	45.40	2.28	6.90
4/10/1998	OW-01	50.36	42.99	7.37	46.59	3.60	6.83
4/17/1998	OW-01	50.36	43.11	7.25	47.14	4.03	6.65
4/24/1998	OW-01	50.36	42.71	7.65	47.10	4.39	6.99
4/27/1998	OW-01	50.36	42.79	7.57	46.99	4.20	6.94
5/1/1998	OW-01	50.36	43.11	7.25	44.80	1.69	7.00
5/8/1998	OW-01	50.36	43.10	7.26	44.50	1.40	7.05
5/15/1998	OW-01	50.36	43.02	7.34	44.53	1.51	7.11

TABLE 1-1
HISTORIC GROUNDWATER AND FREE-PRODUCT ELEVATION DATA,
UST SITE 21478,
MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA

Measurement Date	Geotracker Well ID	RPE (ft MSL)	Product Depth (ft)	Product Elevation (ft MSL)	Groundwater Depth (ft)	Fuel Thickness (ft)	Corrected Hydraulic Head Elevation (ft MSL)
5/21/1998	OW-01	50.36	43.14	7.22	43.27	0.13	7.20
5/22/1998	OW-01	50.36	43.47	6.89	43.55	0.08	6.88
5/29/1998	OW-01	50.36			43.50	NA	6.86
6/5/1998	OW-01	50.36	43.73	6.63	43.74	0.01	6.63
6/9/1998	OW-01	50.36	44.19	6.17	44.20	0.01	6.17
6/12/1998	OW-01	50.36	44.10	6.26	44.44	0.34	6.21
6/17/1998	OW-01	50.36	43.65	6.71	43.67	0.02	6.71
6/19/1998	OW-01	50.36			43.78	NA	6.58
6/23/1998	OW-01	50.36			43.90	NA	6.46
6/26/1998	OW-01	50.36	44.35	6.01	44.50	0.15	5.99
6/30/1998	OW-01	50.36			44.10	NA	6.26
7/7/1998	OW-01	50.36			44.25	NA	6.11
7/10/1998	OW-01	50.36	44.30	6.06	44.35	0.05	6.05
7/14/1998	OW-01	50.36			44.50	NA	5.86
7/17/1998	OW-01	50.36			44.20	NA	6.16
7/21/1998	OW-01	50.36			44.04	NA	6.32
7/24/1998	OW-01	50.36			44.34	NA	6.02
7/28/1998	OW-01	50.36	43.52	6.84	43.60	0.08	6.83
7/31/1998	OW-01	50.36			44.31	NA	6.05
8/4/1998	OW-01	50.36			43.94	NA	6.42
8/5/1998	OW-01	50.36	42.79	7.57	43.61	0.82	7.45
8/11/1998	OW-01	50.36	44.31	6.05	44.32	0.01	6.05
8/14/1998	OW-01	50.36			43.50	NA	6.86
8/18/1998	OW-01	50.36	44.05	6.31	44.07	0.02	6.31
8/21/1998	OW-01	50.36			44.23	NA	6.13
8/25/1998	OW-01	50.36			44.35	NA	6.01
8/28/1998	OW-01	50.36			43.63	NA	6.73
9/1/1998	OW-01	50.36			44.16	NA	6.20
9/4/1998	OW-01	50.36			44.40	NA	5.96
9/9/1998	OW-01	50.36			44.90	NA	5.46
9/11/1998	OW-01	50.36			44.18	NA	6.18
9/14/1998	OW-01	50.36			44.12	NA	6.24
9/18/1998	OW-01	50.36			44.20	NA	6.16
9/25/1998	OW-01	50.36			44.45	NA	5.91
9/28/1998	OW-01	50.36			44.90	NA	5.46
10/2/1998	OW-01	50.36			44.61	NA	5.75
10/5/1998	OW-01	50.36			44.75	NA	5.61
10/9/1998	OW-01	50.36			44.49	NA	5.87
10/12/1998	OW-01	50.36			44.50	NA	5.86
10/16/1998	OW-01	50.36			44.61	NA	5.75
10/23/1998	OW-01	50.36			45.32	NA	5.04
10/26/1998	OW-01	50.36			44.30	NA	6.06
11/2/1998	OW-01	50.36			44.30	NA	6.06
11/3/1998	OW-01	50.36	42.79	7.57	43.58	0.79	7.45
11/9/1998	OW-01	50.36			44.20	NA	6.16
11/16/1998	OW-01	50.36			44.30	NA	6.06
12/7/1998	OW-01	50.36	*	6.76	43.60	Sheen	6.76
12/14/1998	OW-01	50.36			45.50	NA	4.86
1/5/1999	OW-01	50.36			44.10	NA	6.26
1/8/1999	OW-01	50.36			44.98	NA	5.38
1/11/1999	OW-01	50.36			44.80	NA	5.56
1/15/1999	OW-01	50.36			44.00	NA	6.36
1/18/1999	OW-01	50.36			44.55	NA	5.81
1/22/1999	OW-01	50.36			44.10	NA	6.26
2/2/1999	OW-01	50.36			44.40	NA	5.96
2/9/1999	OW-01	50.36			44.20	NA	6.16
2/16/1999	OW-01	50.36			44.35	NA	6.01
2/24/1999	OW-01	50.36			44.10	NA	6.26
3/5/1999	OW-01	50.36			43.80	NA	6.56
3/18/1999	OW-01	50.36			44.00	NA	6.36

TABLE 1-1
HISTORIC GROUNDWATER AND FREE-PRODUCT ELEVATION DATA,
UST SITE 21478,
MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA

Measurement Date	Geotracker Well ID	RPE (ft MSL)	Product Depth (ft)	Product Elevation (ft MSL)	Groundwater Depth (ft)	Fuel Thickness (ft)	Corrected Hydraulic Head Elevation (ft MSL)
4/9/1999	OW-01	50.36			43.90	NA	6.46
4/27/1999	OW-01	50.36			44.35	NA	6.01
5/2/1999	OW-01	50.36			44.30	NA	6.06
6/3/1999	OW-01	50.36			44.50	NA	5.86
7/29/1999	OW-01	50.36			45.19	NA	5.17
8/9/1999	OW-01	50.36	44.50	5.86	44.51	0.01	5.86
8/30/1999	OW-01	50.36			44.60	NA	5.76
9/10/1999	OW-01	50.36			44.00	NA	6.36
10/25/1999	OW-01	50.36	44.57	5.79	44.58	0.01	5.79
11/10/1999	OW-01	50.36			44.95	NA	5.41
12/29/1999	OW-01	50.36			43.90	NA	6.46
1/27/2000	OW-01	50.36			45.64	NA	4.72
2/21/2000	OW-01	50.36	44.73	5.63	44.74	0.01	5.63
4/27/2000	OW-01	50.36			45.80	NA	4.56
5/15/2000	OW-01	50.36	44.80	5.56	44.82	0.02	5.56
5/25/2000	OW-01	50.36			45.70	NA	4.66
10/28/2000	OW-01	50.36	44.63	5.73	44.65	0.02	5.73
2/16/2001	OW-01	50.36	44.42	5.94	44.49	0.07	5.93
4/6/2001	OW-01	50.36	44.04	6.32	44.06	0.02	6.32
8/24/2001	OW-01	50.36	44.19	6.17	44.20	0.01	6.17
10/26/2001	OW-01	50.36	44.50	5.86	44.53	0.03	5.86
2/9/2002	OW-01	50.36	44.43	5.93	44.44	0.01	5.93
4/6/2002	OW-01	50.36	44.50	5.86	44.51	0.01	5.86
8/15/2002	OW-01	50.36	*	5.81	44.55	Sheen	5.81
10/16/2002	OW-01	50.36	*	5.91	44.45	Sheen	5.91
2/4/2003	OW-01	50.36	*	6.20	44.16	Sheen	6.20
4/7/2003	OW-01	50.36	*	6.50	43.86	Sheen	6.50
6/12/2003	OW-01	50.36	43.47	6.89	45.55	2.08	6.58
6/16/2003	OW-01	50.36	43.47	6.89	45.43	1.96	6.60
6/30/2003	OW-01	50.36	43.79	6.57	43.98	0.19	6.54
7/7/2003	OW-01	50.36	43.81	6.55	43.96	0.15	6.53
7/24/2003	OW-01	50.36	43.91	6.45	44.06	0.15	6.43
8/19/2003	OW-01	50.36	43.99	6.37	44.08	0.09	6.36
9/16/2003	OW-01	50.36	44.03	6.33	44.15	0.12	6.31
10/7/2003	OW-01	50.36	44.03	6.33	44.08	0.05	6.32
10/22/2003	OW-01	50.36	44.08	6.28	44.12	0.04	6.27
11/26/2003	OW-01	50.36	44.11	6.25	44.14	0.03	6.25
12/24/2003	OW-01	50.36	44.22	6.14	44.30	0.08	6.13
1/8/2004	OW-01	50.36	44.21	6.15	44.27	0.06	6.14
2/5/2004	OW-01	50.36	44.29	6.07	44.36	0.07	6.06
3/4/2004	OW-01	50.36	44.19	6.17	44.22	0.03	6.17
3/31/2004	OW-01	50.36	*	6.19	44.17	Sheen	6.19
4/14/2004	OW-01	50.36	*	6.20	44.16	Sheen	6.20
4/28/2004	OW-01	50.36	*	6.09	44.27	Sheen	6.09
5/12/2004	OW-01	50.36	*	6.09	44.27	Sheen	6.09
6/1/2004	OW-01	50.36	*	6.01	44.35	Sheen	6.01
6/15/2004	OW-01	50.36	*	6.01	44.35	Sheen	6.01
7/1/2004	OW-01	50.36	*	5.95	44.41	Sheen	5.95
7/14/2004	OW-01	50.36	*	5.95	44.41	Sheen	5.95
8/4/2004	OW-01	50.36	*	5.95	44.41	Sheen	5.95
9/16/2004	OW-01	50.36	*	6.01	44.35	Sheen	6.01
10/5/2004	OW-01	50.36	*	5.88	44.48	Sheen	5.88
11/17/2004	OW-01	50.36	*	6.27	44.09	Sheen	6.27
12/15/2004	OW-01	50.36	*	6.37	43.99	Sheen	6.37
1/13/2005	OW-01	50.36	*	6.87	43.49	Sheen	6.87
2/16/2005	OW-01	50.36	42.73	7.63	45.22	2.49	7.26
8/9/2005	OW-01	50.36	42.80	7.56	46.70	3.90	6.98

TABLE 1-1
HISTORIC GROUNDWATER AND FREE-PRODUCT ELEVATION DATA,
UST SITE 21478,
MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA

Measurement Date	Geotracker Well ID	RPE (ft MSL)	Product Depth (ft)	Product Elevation (ft MSL)	Groundwater Depth (ft)	Fuel Thickness (ft)	Corrected Hydraulic Head Elevation (ft MSL)
3/5/1998	OW-02	50.11	43.03	7.08	43.19	0.16	7.06
3/6/1998	OW-02	50.11	43.00	7.11	43.09	0.09	7.10
3/19/1998	OW-02	50.11	42.82	7.29	42.88	0.06	7.28
4/10/1998	OW-02	50.11	42.60	7.51	43.77	1.17	7.33
4/17/1998	OW-02	50.11	42.60	7.51	44.22	1.62	7.27
4/24/1998	OW-02	50.11	42.24	7.87	44.34	2.10	7.56
4/27/1998	OW-02	50.11	42.35	7.76	44.18	1.83	7.49
5/1/1998	OW-02	50.11	42.29	7.82	43.87	1.58	7.58
5/8/1998	OW-02	50.11	42.10	8.01	43.20	1.10	7.85
5/15/1998	OW-02	50.11	42.43	7.68	43.78	1.35	7.48
5/21/1998	OW-02	50.11	42.62	7.49	42.65	0.03	7.49
5/22/1998	OW-02	50.11	42.48	7.63	43.65	1.17	7.45
5/29/1998	OW-02	50.11	42.40	7.71	43.98	1.58	7.47
6/5/1998	OW-02	50.11	42.59	7.52	44.10	1.51	7.29
6/9/1998	OW-02	50.11	42.65	7.46	44.10	1.45	7.24
6/12/1998	OW-02	50.11	42.70	7.41	44.00	1.30	7.22
6/17/1998	OW-02	50.11	42.51	7.6	43.90	1.39	7.39
6/19/1998	OW-02	50.11	42.50	7.61	42.54	0.04	7.60
6/23/1998	OW-02	50.11	42.60	7.51	44.00	1.40	7.30
6/26/1998	OW-02	50.11	42.80	7.31	44.10	1.30	7.12
6/30/1998	OW-02	50.11	42.70	7.41	44.10	1.40	7.20
7/7/1998	OW-02	50.11	42.80	7.31	44.00	1.20	7.13
7/10/1998	OW-02	50.11	42.45	7.66	44.10	1.65	7.41
7/14/1998	OW-02	50.11	43.00	7.11	44.30	1.30	6.92
7/17/1998	OW-02	50.11	42.98	7.13	44.21	1.23	6.95
7/21/1998	OW-02	50.11	42.84	7.27	43.91	1.07	7.11
7/24/1998	OW-02	50.11	42.87	7.24	43.77	0.90	7.11
7/28/1998	OW-02	50.11	42.78	7.33	45.20	2.42	6.97
7/31/1998	OW-02	50.11	43.00	7.11	43.95	0.95	6.97
8/4/1998	OW-02	50.11	42.90	7.21	42.92	0.02	7.21
8/5/1998	OW-02	50.11	42.35	7.76	43.86	1.51	7.53
8/11/1998	OW-02	50.11	43.1	7.01	43.70	0.60	6.92
8/14/1998	OW-02	50.11	43.02	7.09	43.82	0.80	6.97
8/18/1998	OW-02	50.11	42.98	7.13	43.54	0.56	7.05
8/21/1998	OW-02	50.11	43.06	7.05	43.31	0.25	7.01
8/25/1998	OW-02	50.11	43.09	7.02	43.78	0.69	6.92
8/28/1998	OW-02	50.11	43.17	6.94	43.34	0.17	6.91
9/1/1998	OW-02	50.11			43.31	NA	6.80
9/4/1998	OW-02	50.11			43.31	NA	6.80
9/9/1998	OW-02	50.11	43.15	6.96	43.20	0.05	6.95
9/11/1998	OW-02	50.11			43.20	NA	6.91
9/14/1998	OW-02	50.11			43.20	NA	6.91
9/18/1998	OW-02	50.11	43.60	6.51	43.70	0.10	6.50
9/25/1998	OW-02	50.11	43.58	6.53	43.59	0.01	6.53
9/28/1998	OW-02	50.11	43.35	6.76	43.40	0.05	6.75
10/2/1998	OW-02	50.11			43.46	NA	6.65
10/5/1998	OW-02	50.11			43.50	NA	6.61
10/9/1998	OW-02	50.11	43.39	6.72	43.40	0.01	6.72
10/12/1998	OW-02	50.11	43.40	6.71	43.41	0.01	6.71
10/16/1998	OW-02	50.11			43.36	NA	6.75
10/23/1998	OW-02	50.11			43.15	NA	6.96
10/26/1998	OW-02	50.11			43.35	NA	6.76
11/2/1998	OW-02	50.11			43.68	NA	6.43
11/3/1998	OW-02	50.11	42.35	7.76	43.37	1.02	7.61
11/9/1998	OW-02	50.11	*	6.18	43.93	Sheen	6.18
11/16/1998	OW-02	50.11	43.51	6.6	43.60	0.09	6.59
12/7/1998	OW-02	50.11			43.58	NA	6.53
12/14/1998	OW-02	50.11			43.58	NA	6.53

TABLE 1-1
HISTORIC GROUNDWATER AND FREE-PRODUCT ELEVATION DATA,
UST SITE 21478,
MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA

Measurement Date	Geotracker Well ID	RPE (ft MSL)	Product Depth (ft)	Product Elevation (ft MSL)	Groundwater Depth (ft)	Fuel Thickness (ft)	Corrected Hydraulic Head Elevation (ft MSL)
1/5/1999	OW-02	50.11			44.10	NA	6.01
1/8/1999	OW-02	50.11			44.24	NA	5.87
1/11/1999	OW-02	50.11			44.10	NA	6.01
1/15/1999	OW-02	50.11	43.50	6.61	43.70	0.20	6.58
1/18/1999	OW-02	50.11			43.10	NA	7.01
1/22/1999	OW-02	50.11			43.80	NA	6.31
2/2/1999	OW-02	50.11	44.00	6.11	44.20	0.20	6.08
2/9/1999	OW-02	50.11	43.50	6.61	44.10	0.60	6.52
2/16/1999	OW-02	50.11	*	6.31	43.80	Sheen	6.31
2/24/1999	OW-02	50.11			43.72	NA	6.39
3/5/1999	OW-02	50.11			43.80	NA	6.31
3/18/1999	OW-02	50.11	*	6.21	43.90	Sheen	6.21
4/9/1999	OW-02	50.11			44.00	NA	6.11
4/27/1999	OW-02	50.11	43.99	6.12	44.02	0.03	6.12
5/2/1999	OW-02	50.11			43.65	NA	6.46
6/3/1999	OW-02	50.11			44.00	NA	6.11
7/29/1999	OW-02	50.11			44.18	NA	5.93
8/9/1999	OW-02	50.11	44.15	5.96	44.17	0.02	5.96
8/30/1999	OW-02	50.11			44.10	NA	6.01
9/10/1999	OW-02	50.11			43.95	NA	6.16
10/25/1999	OW-02	50.11	44.27	5.84	44.28	0.01	5.84
11/10/1999	OW-02	50.11			44.35	NA	5.76
12/29/1999	OW-02	50.11			44.00	NA	6.11
2/21/2000	OW-02	50.11			44.47	NA	5.64
4/27/2000	OW-02	50.11	45.30	4.81	45.38	0.08	4.80
5/15/2000	OW-02	50.11			44.42	NA	5.69
5/25/2000	OW-02	50.11			45.38	NA	4.73
8/21/2000	OW-02	50.11			44.47	NA	5.64
10/27/2000	OW-02	50.11			44.40	NA	5.71
2/16/2001	OW-02	50.11			44.21	NA	5.90
4/6/2001	OW-02	50.11			43.70	NA	6.41
8/24/2001	OW-02	50.11	43.92	6.19	43.99	0.07	6.18
10/26/2001	OW-02	50.11	44.08	6.03	44.09	0.01	6.03
2/9/2002	OW-02	50.11	44.17	5.94	44.44	0.27	5.90
4/6/2002	OW-02	50.11			44.27	NA	5.84
8/15/2002	OW-02	50.11	*	5.87	44.24	Sheen	5.87
10/16/2002	OW-02	50.11	*	6.03	44.08	Sheen	6.03
2/4/2003	OW-02	50.11	*	6.28	43.83	Sheen	6.28
4/7/2003	OW-02	50.11	*	6.85	43.26	Sheen	6.85
6/12/2003	OW-02	50.11	43.47	6.64	45.43	1.96	6.35
6/16/2003	OW-02	50.11	43.07	7.04	43.41	0.34	6.99
6/30/2003	OW-02	50.11	43.17	6.94	43.53	0.36	6.89
7/7/2003	OW-02	50.11	43.21	6.90	43.55	0.34	6.85
7/24/2003	OW-02	50.11	43.30	6.81	43.83	0.53	6.73
8/19/2003	OW-02	50.11	43.41	6.70	43.89	0.48	6.63
9/16/2003	OW-02	50.11	43.52	6.59	44.05	0.53	6.51
10/7/2003	OW-02	50.11	43.60	6.51	43.91	0.31	6.46
10/22/2003	OW-02	50.11	43.64	6.47	44.02	0.38	6.41
11/26/2003	OW-02	50.11	43.74	6.37	44.03	0.29	6.33
12/24/2003	OW-02	50.11	43.85	6.26	44.11	0.26	6.22
1/8/2004	OW-02	50.11	43.92	6.19	44.13	0.21	6.16
2/5/2004	OW-02	50.11	43.94	6.17	44.21	0.27	6.13
3/4/2004	OW-02	50.11	43.89	6.22	43.93	0.04	6.21
3/31/2004	OW-02	50.11	*	6.40	43.71	Sheen	6.40
4/14/2004	OW-02	50.11	*	6.42	43.69	Sheen	6.42
4/28/2004	OW-02	50.11	*	6.37	43.74	Sheen	6.37
5/12/2004	OW-02	50.11	*	6.30	43.81	Sheen	6.30
6/1/2004	OW-02	50.11	43.88	6.23	43.89	0.01	6.23
6/15/2004	OW-02	50.11	*	6.18	43.93	Sheen	6.18
7/1/2004	OW-02	50.11	*	6.12	43.99	Sheen	6.12

TABLE 1-1
HISTORIC GROUNDWATER AND FREE-PRODUCT ELEVATION DATA,
UST SITE 21478,
MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA

Measurement Date	Geotracker Well ID	RPE (ft MSL)	Product Depth (ft)	Product Elevation (ft MSL)	Groundwater Depth (ft)	Fuel Thickness (ft)	Corrected Hydraulic Head Elevation (ft MSL)
7/14/2004	OW-02	50.11	*	6.10	44.01	Sheen	6.10
8/4/2004	OW-02	50.11	*	6.08	44.03	Sheen	6.08
9/16/2004	OW-02	50.11	*	6.08	44.03	Sheen	6.08
10/5/2004	OW-02	50.11	*	6.01	44.10	Sheen	6.01
11/17/2004	OW-02	50.11	*	6.30	43.81	Sheen	6.30
12/15/2004	OW-02	50.11	*	7.05	43.06	Sheen	7.05
1/13/2005	OW-02	50.11	*	6.91	43.20	Sheen	6.91
2/16/2005	OW-02	50.11	42.49	7.62	42.50	0.01	7.62
8/9/2005	OW-02	50.11	42.60	7.51	43.40	0.80	7.39
3/5/1998	OW-03	49.98			42.91	NA	7.07
4/27/1998	OW-03	49.98			42.48	NA	7.50
8/5/1998	OW-03	49.98			42.98	NA	7.00
11/3/1998	OW-03	49.98			43.17	NA	6.81
11/16/1998	OW-03	49.98	43.28	6.70	43.38	0.10	6.69
12/7/1998	OW-03	49.98			43.42	NA	6.56
12/14/1998	OW-03	49.98			43.43	NA	6.55
1/5/1999	OW-03	49.98			44.50	NA	5.48
1/8/1999	OW-03	49.98			43.65	NA	6.33
1/11/1999	OW-03	49.98			43.50	NA	6.48
1/15/1999	OW-03	49.98			43.00	NA	6.98
1/18/1999	OW-03	49.98			43.75	NA	6.23
1/22/1999	OW-03	49.98			43.60	NA	6.38
2/2/1999	OW-03	49.98			43.61	NA	6.37
2/9/1999	OW-03	49.98			43.50	NA	6.48
2/16/1999	OW-03	49.98			43.60	NA	6.38
2/24/1999	OW-03	49.98			43.59	NA	6.39
3/5/1999	OW-03	49.98			43.00	NA	6.98
3/18/1999	OW-03	49.98			43.80	NA	6.18
4/9/1999	OW-03	49.98			43.20	NA	6.78
4/27/1999	OW-03	49.98			43.86	NA	6.12
5/2/1999	OW-03	49.98			44.10	NA	5.88
6/3/1999	OW-03	49.98			44.10	NA	5.88
7/29/1999	OW-03	49.98			44.45	NA	5.53
8/9/1999	OW-03	49.98			44.02	NA	5.96
8/30/1999	OW-03	49.98			44.15	NA	5.83
9/10/1999	OW-03	49.98			44.10	NA	5.88
10/25/1999	OW-03	49.98			44.14	NA	5.84
11/10/1999	OW-03	49.98			44.20	NA	5.78
12/29/1999	OW-03	49.98			43.20	NA	6.78
2/21/2000	OW-03	49.98	44.38	5.60	44.39	0.01	5.60
4/27/2000	OW-03	49.98	45.30	4.68	45.38	0.08	4.67
5/15/2000	OW-03	49.98	44.46	5.52	44.48	0.02	5.52
5/25/2000	OW-03	49.98			45.38	NA	4.60
8/21/2000	OW-03	49.98	44.22	5.76	44.72	0.50	5.69
10/27/2000	OW-03	49.98	44.24	5.74	44.89	0.65	5.64
2/16/2001	OW-03	49.98	43.97	6.01	44.71	0.74	5.90
4/6/2001	OW-03	49.98	43.55	6.43	43.77	0.22	6.40
8/24/2001	OW-03	49.98	43.75	6.23	44.39	0.64	6.13
10/26/2001	OW-03	49.98	43.88	6.10	45.03	1.15	5.93
2/9/2002	OW-03	49.98			43.81	1.00 **	6.17
4/6/2002	OW-03	49.98	44.07	5.91	45.38	1.31	5.71
8/15/2002	OW-03	49.98	44.66	5.32	44.68	0.02	5.32
10/16/2002	OW-03	49.98	43.99	5.99	44.03	0.04	5.98
2/4/2003	OW-03	49.98	43.65	6.33	44.07	0.42	6.27
4/7/2003	OW-03	49.98	43.12	6.86	43.37	0.25	6.82
6/12/2003	OW-03	49.98	43.00	6.98	43.29	0.29	6.94
6/16/2003	OW-03	49.98	43.00	6.98	43.28	0.28	6.94
6/30/2003	OW-03	49.98	43.14	6.84	43.22	0.08	6.83

TABLE 1-1
HISTORIC GROUNDWATER AND FREE-PRODUCT ELEVATION DATA,
UST SITE 21478,
MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA

Measurement Date	Geotracker Well ID	RPE (ft MSL)	Product Depth (ft)	Product Elevation (ft MSL)	Groundwater Depth (ft)	Fuel Thickness (ft)	Corrected Hydraulic Head Elevation (ft MSL)
7/7/2003	OW-03	49.98	43.18	6.80	43.20	0.02	6.80
7/24/2003	OW-03	49.98	43.28	6.70	43.37	0.09	6.69
8/19/2003	OW-03	49.98	43.40	6.58	43.48	0.08	6.57
9/16/2003	OW-03	49.98	43.47	6.51	43.59	0.12	6.49
10/7/2003	OW-03	49.98	43.49	6.49	43.77	0.28	6.45
10/22/2003	OW-03	49.98	43.52	6.46	43.96	0.44	6.39
11/26/2003	OW-03	49.98	43.57	6.41	44.30	0.73	6.30
12/24/2003	OW-03	49.98	43.66	6.32	44.60	0.94	6.18
1/8/2004	OW-03	49.98	43.66	6.32	44.76	1.10	6.16
2/5/2004	OW-03	49.98	43.70	6.28	44.82	1.12	6.11
3/4/2004	OW-03	49.98	43.69	6.29	44.54	0.85	6.16
3/31/2004	OW-03	49.98	43.55	6.43	44.09	0.54	6.35
4/14/2004	OW-03	49.98	43.54	6.44	44.11	0.57	6.35
4/28/2004	OW-03	49.98	43.60	6.38	44.21	0.61	6.29
5/12/2004	OW-03	49.98	43.65	6.33	44.41	0.76	6.22
6/1/2004	OW-03	49.98	43.70	6.28	44.60	0.90	6.15
6/15/2004	OW-03	49.98	43.71	6.27	44.75	1.04	6.11
7/1/2004	OW-03	49.98	43.78	6.20	44.83	1.05	6.04
7/14/2004	OW-03	49.98	43.78	6.20	44.91	1.13	6.03
8/4/2004	OW-03	49.98	43.77	6.21	45.05	1.28	6.02
9/16/2004	OW-03	49.98	43.77	6.21	45.17	1.40	6.00
10/5/2004	OW-03	49.98	43.83	6.15	45.43	1.60	5.91
11/17/2004	OW-03	49.98	43.58	6.40	44.75	1.17	6.22
12/15/2004	OW-03	49.98	43.45	6.53	43.90	0.45	6.46
1/13/2005	OW-03	49.98	43.09	6.89	43.19	0.10	6.87
2/16/2005	OW-03	49.98	42.39	7.59	42.63	0.24	7.55
8/9/2005	OW-03	49.98	42.51	7.47	45.91	3.40	6.96
4/30/1996	RW-01	52.41			45.77	NA	6.64
5/7/1996	RW-01	52.41	45.8	6.61	46.11	0.31	6.56
5/15/1996	RW-01	52.41	45.83	6.58	46.10	0.27	6.54
5/22/1996	RW-01	52.41	45.87	6.54	46.25	0.38	6.48
5/29/1996	RW-01	52.41	45.81	6.60	46.10	0.29	6.56
6/4/1996	RW-01	52.41	45.88	6.53	46.32	0.44	6.46
6/12/1996	RW-01	52.41	45.81	6.60	46.05	0.24	6.56
6/19/1996	RW-01	52.41	45.8	6.61	46.11	0.31	6.56
6/26/1996	RW-01	52.41	45.84	6.57	46.07	0.23	6.54
7/3/1996	RW-01	52.41	45.88	6.53	46.16	0.28	6.49
7/10/1996	RW-01	52.41	45.85	6.56	46.05	0.20	6.53
7/17/1996	RW-01	52.41	45.88	6.53	46.11	0.23	6.50
7/24/1996	RW-01	52.41	45.87	6.54	46.12	0.25	6.50
7/31/1996	RW-01	52.41	45.85	6.56	46.10	0.25	6.52
8/8/1996	RW-01	52.41	45.80	6.61	46.04	0.24	6.57
8/14/1996	RW-01	52.41	45.82	6.59	45.90	0.08	6.58
8/21/1996	RW-01	52.41	45.81	6.60	46.04	0.23	6.57
9/4/1996	RW-01	52.41	45.8	6.61	46.08	0.28	6.57
9/11/1996	RW-01	52.41	45.78	6.63	46.01	0.23	6.60
9/18/1996	RW-01	52.41	45.79	6.62	46.03	0.24	6.58
9/25/1996	RW-01	52.41	45.77	6.64	45.96	0.19	6.61
10/3/1996	RW-01	52.41	45.81	6.60	46.00	0.19	6.57
10/9/1996	RW-01	52.41	45.81	6.60	45.96	0.15	6.58
10/16/1996	RW-01	52.41	45.81	6.60	45.97	0.16	6.58
10/23/1996	RW-01	52.41	45.78	6.63	45.95	0.17	6.60
10/30/1996	RW-01	52.41	45.79	6.62	46.11	0.32	6.57
11/6/1996	RW-01	52.41	45.8	6.61	46.05	0.25	6.57
11/13/1996	RW-01	52.41	45.88	6.53	46.10	0.22	6.50
11/15/1996	RW-01	52.41	45.85	6.56	46.15	0.30	6.51
11/20/1996	RW-01	52.41	45.84	6.57	46.00	0.16	6.55

TABLE 1-1
HISTORIC GROUNDWATER AND FREE-PRODUCT ELEVATION DATA,
UST SITE 21478,
MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA

Measurement Date	Geotracker Well ID	RPE (ft MSL)	Product Depth (ft)	Product Elevation (ft MSL)	Groundwater Depth (ft)	Fuel Thickness (ft)	Corrected Hydraulic Head Elevation (ft MSL)
12/12/1996	RW-01	52.41	45.65	6.76	45.84	0.19	6.73
12/18/1996	RW-01	52.41	45.68	6.73	45.97	0.29	6.69
2/5/1997	RW-01	52.41	45.49	6.92	46.22	0.73	6.81
2/12/1997	RW-01	52.41	45.57	6.84	46.15	0.58	6.75
2/19/1997	RW-01	52.41	45.64	6.77	46.01	0.37	6.71
2/26/1997	RW-01	52.41	45.61	6.80	45.95	0.34	6.75
3/6/1997	RW-01	52.41	45.63	6.78	45.91	0.28	6.74
3/12/1997	RW-01	52.41	45.75	6.66	46.05	0.30	6.61
3/27/1997	RW-01	52.41	45.57	6.84	45.94	0.37	6.78
3/5/1998	RW-01	52.41			45.32	NA	7.09
3/19/1998	RW-01	52.41			45.33	NA	7.08
4/10/1998	RW-01	52.41	45.43	6.98	45.44	0.01	6.98
4/17/1998	RW-01	52.41	47.49	4.92	47.52	0.03	4.92
4/24/1998	RW-01	52.41	45.25	7.16	45.27	0.02	7.16
4/27/1998	RW-01	52.41			45.46	NA	6.95
5/1/1998	RW-01	52.41			45.35	NA	7.06
5/8/1998	RW-01	52.41			45.32	NA	7.09
5/15/1998	RW-01	52.41	45.28	7.13	45.38	0.10	7.11
5/22/1998	RW-01	52.41			45.53	NA	6.88
5/29/1998	RW-01	52.41	45.40	7.01	45.45	0.05	7.00
6/5/1998	RW-01	52.41	45.47	6.94	45.48	0.01	6.94
6/9/1998	RW-01	52.41			47.50	NA	4.91
6/12/1998	RW-01	52.41	45.60	6.81	45.70	0.10	6.79
6/17/1998	RW-01	52.41			45.40	NA	7.01
6/19/1998	RW-01	52.41	45.41	7.00	45.42	0.01	7.00
6/23/1998	RW-01	52.41	44.80	7.61	44.82	0.02	7.61
6/26/1998	RW-01	52.41	45.45	6.96	45.50	0.05	6.95
6/30/1998	RW-01	52.41			45.41	NA	7.00
7/7/1998	RW-01	52.41			45.53	NA	6.88
7/10/1998	RW-01	52.41			45.35	NA	7.06
7/14/1998	RW-01	52.41			45.65	NA	6.76
7/17/1998	RW-01	52.41			45.62	NA	6.79
7/21/1998	RW-01	52.41			45.43	NA	6.98
7/24/1998	RW-01	52.41			45.41	NA	7.00
7/28/1998	RW-01	52.41	45.44	6.97	46.61	1.17	6.79
7/31/1998	RW-01	52.41			45.7	NA	6.71
8/4/1998	RW-01	52.41			45.53	NA	6.88
8/5/1998	RW-01	52.41			45.45	NA	6.96
8/11/1998	RW-01	52.41			43.30	NA	9.11
8/14/1998	RW-01	52.41			45.80	NA	6.61
8/18/1998	RW-01	52.41			45.36	NA	7.05
8/21/1998	RW-01	52.41			45.29	NA	7.12
8/25/1998	RW-01	52.41			45.41	NA	7.00
8/28/1998	RW-01	52.41			45.38	NA	7.03
9/1/1998	RW-01	52.41			45.37	NA	7.04
9/4/1998	RW-01	52.41			45.41	NA	7.00
9/9/1998	RW-01	52.41			43.25	NA	9.16
9/11/1998	RW-01	52.41			45.40	NA	7.01
9/14/1998	RW-01	52.41			45.48	NA	6.93
9/18/1998	RW-01	52.41			43.20	NA	9.21
9/25/1998	RW-01	52.41			45.65	NA	6.76
9/28/1998	RW-01	52.41			45.35	NA	7.06
10/2/1998	RW-01	52.41			45.50	NA	6.91
10/5/1998	RW-01	52.41			45.45	NA	6.96
10/9/1998	RW-01	52.41			45.32	NA	7.09
10/12/1998	RW-01	52.41			45.32	NA	7.09
10/16/1998	RW-01	52.41			45.38	NA	7.03
10/23/1998	RW-01	52.41			45.38	NA	7.03

TABLE 1-1
HISTORIC GROUNDWATER AND FREE-PRODUCT ELEVATION DATA,
UST SITE 21478,
MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA

Measurement Date	Geotracker Well ID	RPE (ft MSL)	Product Depth (ft)	Product Elevation (ft MSL)	Groundwater Depth (ft)	Fuel Thickness (ft)	Corrected Hydraulic Head Elevation (ft MSL)
10/26/1998	RW-01	52.41			45.85	NA	6.56
11/3/1998	RW-01	52.41			45.25	NA	7.16
11/9/1998	RW-01	52.41			45.25	NA	7.16
11/16/1998	RW-01	52.41	45.36	7.05	45.41	0.05	7.04
12/7/1998	RW-01	52.41			45.50	NA	6.91
12/14/1998	RW-01	52.41			45.50	NA	6.91
1/5/1999	RW-01	52.41	45.50	6.91	45.55	0.05	6.90
1/8/1999	RW-01	52.41	*	6.76	45.65	Sheen	6.76
1/11/1999	RW-01	52.41			45.50	NA	6.91
1/15/1999	RW-01	52.41			45.00	NA	7.41
1/18/1999	RW-01	52.41			45.50	NA	6.91
1/22/1999	RW-01	52.41			45.25	NA	7.16
2/2/1999	RW-01	52.41			45.35	NA	7.06
2/9/1999	RW-01	52.41			45.40	NA	7.01
2/16/1999	RW-01	52.41			45.00	NA	7.41
2/24/1999	RW-01	52.41			45.64	NA	6.77
3/5/1999	RW-01	52.41			45.00	NA	7.41
3/18/1999	RW-01	52.41			45.50	NA	6.91
4/9/1999	RW-01	52.41			45.10	NA	7.31
4/28/1999	RW-01	52.41			45.86	NA	6.55
5/2/1999	RW-01	52.41			45.00	NA	7.41
6/3/1999	RW-01	52.41			45.20	NA	7.21
7/29/1999	RW-01	52.41	*	6.46	45.95	Sheen	6.46
8/9/1999	RW-01	52.41			45.90	NA	6.51
8/30/1999	RW-01	52.41			45.30	NA	7.11
9/10/1999	RW-01	52.41	*	6.61	45.80	Sheen	6.61
10/25/1999	RW-01	52.41	45.83	6.58	46.57	0.74	6.47
11/10/1999	RW-01	52.41	44.75	7.66	45.00	0.25	7.62
12/29/1999	RW-01	52.41	45.00	7.41	45.10	0.10	7.40
1/27/2000	RW-01	52.41	46.80	5.61	47.00	0.20	5.58
2/21/2000	RW-01	52.41	45.75	6.66	46.96	1.21	6.48
4/27/2000	RW-01	52.41	46.00	6.41	46.50	0.50	6.33
5/15/2000	RW-01	52.41	45.94	6.47	46.94	1.00	6.32
5/25/2000	RW-01	52.41	46.01	6.40	46.50	0.49	6.33
8/21/2000	RW-01	52.41	45.84	6.57	46.51	0.67	6.47
10/27/2000	RW-01	52.41	45.70	6.71	46.71	1.01	6.56
2/16/2001	RW-01	52.41	45.63	6.78	45.64	0.01	6.78
4/6/2001	RW-01	52.41	45.54	6.87	46.09	0.55	6.79
8/24/2001	RW-01	52.41	45.61	6.80	45.63	0.02	6.80
10/26/2001	RW-01	52.41	45.62	6.79	45.63	0.01	6.79
2/9/2002	RW-01	52.41	45.79	6.62	46.03	0.24	6.58
4/6/2002	RW-01	52.41	45.90	6.51	46.15	0.25	6.47
8/15/2002	RW-01	52.41	45.90	6.51	45.93	0.03	6.51
10/16/2002	RW-01	52.41	45.80	6.61	45.81	0.01	6.61
2/4/2003	RW-01	52.41	45.67	6.74	45.90	0.23	6.71
4/7/2003	RW-01	52.41	45.62	6.79	46.21	0.59	6.70
6/12/2003	RW-01	52.41	45.59	6.82	46.44	0.85	6.69
6/16/2003	RW-01	52.41	45.55	6.86	46.31	0.76	6.75
6/30/2003	RW-01	52.41	45.65	6.76	45.84	0.19	6.73
7/7/2003	RW-01	52.41	45.63	6.78	45.81	0.18	6.75
7/24/2003	RW-01	52.41	45.62	6.79	45.78	0.16	6.77
8/19/2003	RW-01	52.41	45.59	6.82	45.79	0.20	6.79
9/16/2003	RW-01	52.41	45.56	6.85	45.85	0.29	6.81
10/7/2003	RW-01	52.41	45.55	6.86	45.73	0.18	6.83
10/22/2003	RW-01	52.41	45.51	6.90	45.74	0.23	6.87
11/26/2003	RW-01	52.41	45.61	6.80	45.81	0.20	6.77
12/24/2003	RW-01	52.41	45.67	6.74	45.83	0.16	6.72

TABLE 1-1
HISTORIC GROUNDWATER AND FREE-PRODUCT ELEVATION DATA,
UST SITE 21478,
MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA

Measurement Date	Geotracker Well ID	RPE (ft MSL)	Product Depth (ft)	Product Elevation (ft MSL)	Groundwater Depth (ft)	Fuel Thickness (ft)	Corrected Hydraulic Head Elevation (ft MSL)
1/8/2004	RW-01	52.41	45.62	6.79	45.82	0.20	6.76
2/5/2004	RW-01	52.41	45.66	6.75	45.88	0.22	6.72
3/4/2004	RW-01	52.41	45.60	6.81	45.81	0.21	6.78
3/31/2004	RW-01	52.41	45.72	6.69	46.00	0.28	6.65
4/14/2004	RW-01	52.41	45.77	6.64	46.12	0.35	6.59
4/28/2004	RW-01	52.41	45.81	6.60	46.21	0.40	6.54
5/12/2004	RW-01	52.41	45.76	6.65	46.21	0.45	6.58
6/1/2004	RW-01	52.41	45.78	6.63	46.33	0.55	6.55
6/15/2004	RW-01	52.41	45.78	6.63	46.40	0.62	6.54
7/1/2004	RW-01	52.41	45.77	6.64	46.44	0.67	6.54
7/14/2004	RW-01	52.41	45.75	6.66	46.44	0.69	6.56
8/4/2004	RW-01	52.41	45.70	6.71	46.45	0.75	6.60
9/16/2004	RW-01	52.41	45.61	6.80	46.42	0.81	6.68
10/5/2004	RW-01	52.41	45.70	6.71	46.59	0.89	6.58
11/17/2004	RW-01	52.41	45.48	6.93	46.41	0.93	6.79
12/15/2004	RW-01	52.41	45.50	6.91	46.67	1.17	6.73
1/13/2005	RW-01	52.41	44.79	7.62	45.91	1.12	7.45
2/16/2005	RW-01	52.41	44.96	7.45	46.59	1.63	7.21
8/9/2005	RW-01	52.41	44.57	7.84	48.48	3.91	7.25
11/3/1998	RW-02	50.39			43.88	NA	6.51
2/24/1999	RW-02	50.39	44.29	6.10	44.34	0.05	6.09
4/28/1999	RW-02	50.39			44.50	NA	5.89
7/29/1999	RW-02	50.39			44.70	NA	5.69
8/9/1999	RW-02	50.39	44.61	5.78	44.62	0.01	5.78
9/10/2003	RW-02	50.39	44.69	5.70	44.70	0.01	5.70
10/25/1999	RW-02	50.39	44.64	5.75	45.02	0.38	5.69
11/10/1999	RW-02	50.39	44.75	5.64	45.00	0.25	5.60
12/29/1999	RW-02	50.39			43.10	NA	7.29
1/27/2000	RW-02	50.39	46.00	4.39	46.30	0.30	4.35
2/21/2000	RW-02	50.39	44.63	5.76	45.96	1.33	5.56
4/27/2000	RW-02	50.39	45.55	4.84	45.57	0.02	4.84
5/15/2000	RW-02	50.39	44.86	5.53	46.86	2.00	5.23
5/25/2000	RW-02	50.39			45.50	NA	4.89
8/21/2000	RW-02	50.39	44.34	6.05	47.50	3.16	5.58
10/27/2000	RW-02	50.39	44.26	6.13	47.47	3.21	5.65
2/16/2001	RW-02	50.39	44.24	6.15	46.31	2.07	5.84
4/6/2001	RW-02	50.39	43.79	6.60	44.78	0.99	6.45
8/24/2001	RW-02	50.39	44.24	6.15	45.40	1.16	5.98
10/26/2001	RW-02	50.39	44.51	5.88	45.41	0.90	5.75
2/9/2002	RW-02	50.39	45.79	4.60	46.22	0.43	4.54
4/6/2002	RW-02	50.39	44.48	5.91	45.48	1.00	5.76
8/8/2002	RW-02	50.39	45.00	5.39	45.03	0.03	5.39
10/16/2002	RW-02	50.39	44.30	6.09	45.90	1.60	5.85
2/4/2003	RW-02	50.39	43.88	6.51	46.15	2.27	6.17
4/7/2003	RW-02	50.39	44.02	6.37	44.05	0.03	6.37
6/12/2003	RW-02	50.39	45.59	4.80	46.44	0.85	4.67
6/16/2003	RW-02	50.39	45.55	4.84	46.31	0.76	4.73
6/30/2003	RW-02	50.39	45.65	4.74	45.84	0.19	4.71
7/7/2003	RW-02	50.39	45.63	4.76	45.81	0.18	4.73
7/24/2003	RW-02	50.39	45.62	4.77	45.78	0.16	4.75
8/19/2003	RW-02	50.39	45.59	4.80	45.79	0.20	4.77
9/16/2003	RW-02	50.39	45.56	4.83	45.85	0.29	4.79
10/7/2003	RW-02	50.39	44.10	6.29	44.18	0.08	6.28
10/22/2003	RW-02	50.39	44.14	6.25	44.26	0.12	6.23
11/26/2003	RW-02	50.39	44.17	6.22	44.41	0.24	6.18
12/24/2003	RW-02	50.39	44.28	6.11	44.52	0.24	6.07
1/8/2004	RW-02	50.39	44.26	6.13	44.64	0.38	6.07
2/5/2004	RW-02	50.39	44.35	6.04	44.77	0.42	5.98
3/4/2004	RW-02	50.39	44.22	6.17	44.23	0.01	6.17

TABLE 1-1
HISTORIC GROUNDWATER AND FREE-PRODUCT ELEVATION DATA,
UST SITE 21478,
MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA

Measurement Date	Geotracker Well ID	RPE (ft MSL)	Product Depth (ft)	Product Elevation (ft MSL)	Groundwater Depth (ft)	Fuel Thickness (ft)	Corrected Hydraulic Head Elevation (ft MSL)
3/31/2004	RW-02	50.39	44.08	6.31	45.03	0.95	6.17
4/14/2004	RW-02	50.39	44.04	6.35	45.18	1.14	6.18
4/28/2004	RW-02	50.39	44.14	6.25	45.52	1.38	6.04
5/12/2004	RW-02	50.39	44.12	6.27	45.75	1.63	6.03
6/1/2004	RW-02	50.39	44.11	6.28	46.17	2.06	5.97
6/15/2004	RW-02	50.39	44.12	6.27	46.45	2.33	5.92
7/1/2004	RW-02	50.39	44.13	6.26	46.69	2.56	5.88
7/14/2004	RW-02	50.39	44.11	6.28	46.95	2.84	5.85
8/4/2004	RW-02	50.39	44.09	6.30	47.19	3.10	5.84
9/16/2004	RW-02	50.39	43.95	6.44	47.35	3.40	5.93
10/5/2004	RW-02	50.39	44.07	6.32	47.74	3.67	5.77
11/17/2004	RW-02	50.39	43.82	6.57	46.38	2.56	6.19
12/15/2004	RW-02	50.39	43.70	6.69	46.00	2.30	6.35
1/13/2005	RW-02	50.39	43.29	7.10	44.71	1.42	6.89
2/16/2005	RW-02	50.39	42.88	7.51	44.31	1.43	7.30
8/9/2005	RW-02	50.39	43.00	7.39	46.39	3.39	6.88
11/3/1998	RW-03	50.04			43.21	NA	6.83
2/24/1999	RW-03	50.04			43.82	NA	6.22
4/27/1999	RW-03	50.04			43.90	NA	6.14
7/29/1999	RW-03	50.04			44.40	NA	5.64
8/9/1999	RW-03	50.04			44.03	NA	6.01
9/10/1999	RW-03	50.04			44.05	NA	5.99
10/25/1999	RW-03	50.04			44.16	NA	5.88
11/10/1999	RW-03	50.04			44.22	NA	5.82
12/29/1999	RW-03	50.04			44.10	NA	5.94
2/21/2000	RW-03	50.04			44.35	NA	5.69
4/27/2000	RW-03	50.04			44.35	NA	5.69
5/15/2000	RW-03	50.04			44.32	NA	5.72
5/25/2000	RW-03	50.04			44.35	NA	5.69
8/21/2000	RW-03	50.04			44.30	NA	5.74
10/27/2000	RW-03	50.04			44.28	NA	5.76
2/16/2001	RW-03	50.04			44.10	NA	5.94
4/6/2001	RW-03	50.04			43.68	NA	6.36
8/24/2001	RW-03	50.04	43.87	6.17	43.91	0.04	6.16
10/26/2001	RW-03	50.04			44.02	NA	6.02
2/9/2002	RW-03	50.04			44.11	NA	5.93
4/6/2002	RW-03	50.04			44.17	NA	5.87
8/8/2002	RW-03	50.04			44.15	NA	5.89
10/16/2002	RW-03	50.04			44.07	NA	5.97
2/4/2003	RW-03	50.04			43.74	NA	6.30
4/7/2003	RW-03	50.04			43.25	NA	6.79
10/7/2003	RW-03	50.04			43.57	NA	6.47
4/9/2004	RW-03	50.04			43.66	NA	6.38
10/5/2004	RW-03	50.04			44.06	NA	5.98
8/9/2005	RW-03	50.04			42.62	NA	7.42
11/3/1998	RW-04	40.93			34.36	NA	6.57
2/24/1999	RW-04	40.93			35.27	NA	5.66
4/27/1999	RW-04	40.93			35.29	NA	5.64
7/29/1999	RW-04	40.93			35.47	NA	5.46
8/9/1999	RW-04	40.93			35.40	NA	5.53
9/10/1999	RW-04	40.93			34.41	NA	6.52
10/25/1999	RW-04	40.93			35.37	NA	5.56
11/10/1999	RW-04	40.93			35.45	NA	5.48
12/29/1999	RW-04	40.93			35.00	NA	5.93
2/21/2000	RW-04	40.93			35.59	NA	5.34
4/27/2000	RW-04	40.93			31.60	NA	9.33
5/15/2000	RW-04	40.93			35.58	NA	5.35
5/25/2000	RW-04	40.93			31.50	NA	9.43

TABLE 1-1
HISTORIC GROUNDWATER AND FREE-PRODUCT ELEVATION DATA,
UST SITE 21478,
MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA

Measurement Date	Geotracker Well ID	RPE (ft MSL)	Product Depth (ft)	Product Elevation (ft MSL)	Groundwater Depth (ft)	Fuel Thickness (ft)	Corrected Hydraulic Head Elevation (ft MSL)
8/21/2000	RW-04	40.93			35.58	NA	5.35
10/27/2000	RW-04	40.93			35.35	NA	5.58
2/16/2001	RW-04	40.93			35.27	NA	5.66
4/6/2001	RW-04	40.93			34.89	NA	6.04
8/24/2001	RW-04	40.93			35.04	NA	5.89
10/26/2001	RW-04	40.93			35.20	NA	5.73
2/9/2002	RW-04	40.93			35.20	NA	5.73
4/6/2002	RW-04	40.93			35.35	NA	5.58
8/8/2002	RW-04	40.93			35.44	NA	5.49
10/16/2002	RW-04	40.93			35.28	NA	5.65
2/4/2003	RW-04	40.93			34.98	NA	5.95
4/7/2003	RW-04	40.93			34.50	NA	6.43
10/7/2003	RW-04	40.93			34.83	NA	6.10
4/9/2004	RW-04	40.93			35.49	NA	5.44
10/5/2004	RW-04	40.93			35.35	NA	5.58
8/9/2005	RW-04	40.93			34.17	NA	6.76

Notes:

RPE = Reference Point Elevation

UTM = Unable to measure

NA = Not Applicable

ft = feet

MSL = Mean Sea Level

* = Visible sheen, not measurable product

** = The interphase probe malfunctioned. The first bail came up with 1 ft of free product.

Blank cells in product depth and product elevation fields indicate that no free product was present.

^ = Product removed from well approximately 1 week prior to fluid level monitoring.

TABLE 2-1
GROUNDWATER ANALYTICAL RESULTS,
UST SITE 21478,
MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA
AUGUST, 2005

Well ID	Sample ID	Date Sampled	Units	TPH-d (EPA 8015M)	VOCs (BTEX) EPA 8021B				PAHs (EPA 8310) Compounds Detected
					Benzene	Toluene	Ethylbenzene	Total Xylenes	
MW-01	NS	NS	µg/L	NS	NS	NS	NS	NS	NS
MW-02	21478-MW2	8/10/2005	µg/L	500 U	0.3 U	0.3 U	0.3 U	0.3 U	ND
MW-03	21478-MW3	8/11/2005	µg/L	500 U	0.3 U	0.3 U	0.3 U	0.3 U	ND
MW-04	21478-MW4	8/10/2005	µg/L	500 U	0.3 U	0.3 U	0.3 U	0.32 U	ND
OW-01	21478-OW1	8/11/2005	µg/L	NA	NA	NA	NA	NA	NA
OW-02	NS	NS	µg/L	NS	NS	NS	NS	NS	NS
OW-03	NS	NS	µg/L	NS	NS	NS	NS	NS	NS
RW-01	NS	NS	µg/L	NS	NS	NS	NS	NS	NS
RW-02	NS	NS	µg/L	NS	NS	NS	NS	NS	NS
RW-03	21478-RW3	8/10/2005	µg/L	500 U	0.3 U	0.70 U	0.58 U	2.5 U	ND
RW-04	NS	NS	µg/L	NS	NS	NS	NS	NS	NS

Notes:

VOCs = Volatile Organic Compounds.

BTEX = Benzene, Toluene, Ethylbenzene and Xylenes.

PAHs = Polycyclic Aromatic Hydrocarbons.

TPH-d = Total Petroleum Hydrocarbons as diesel.

NA = Sample not analyzed for constituent.

ND = No compounds detected above laboratory method reporting limit.

NS = Well not sampled

U = Not detected above the associated numerical value.

µg/L = micrograms per liter

TABLE 3-1
GROUNDWATER NATURAL ATTENUATION PARAMETER ANALYTICAL RESULTS,
UST SITE 21478,
MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA
AUGUST, 2005

Well ID	Sample ID	Date Sampled	Alkalinity total as CaCO ₃ (mg/L)	Nitrate as N (mg/L)	Nitrite as N (mg/L)	Sulfate (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethylene (µg/L)	Manganese (mg/L)	Total Iron (mg/L)	Ferrous Iron (mg/L)	Total Sulfides (mg/L)
MW-01	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-02	21478-MW2	8/10/2005	280	4.0	0.1 U	170	1.0 U	1.0 U	1.0 U	0.031	0.1 U	0.1 U	0.05 U
MW-03	21478-MW3	8/11/2005	180	2.9	0.1 U	99	1.0 U	1.0 U	1.0 U	0.005 U	0.232	0.1 U	0.05 U
MW-04	21478-MW4	8/10/2005	300	3.4	0.1 U	140	56.2	1.0 U	1.0 U	0.0751	0.1 U	0.1 U	0.05 U
OW-01	21478-OW1	8/11/2005	580	0.1 U	0.1 U	54	7340	1.0 U	1.0 U	10.4	18.3	14	1.3
OW-02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
OW-03	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
RW-01	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
RW-02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
RW-03	21478-RW3	8/10/2005	360	4.9	0.1 U	150	1.0 U	1.0 U	1.0 U	0.005 U	0.1 U	0.1 U	0.05 U
RW-04	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes:

U = Not detected above the associated numerical value.

N = Nitrogen

NA = Not Applicable

NS = Not Sampled

mg/L = milligrams per liter

µg/L = micrograms per liter

TABLE 3-2
PURGE PARAMETERS,
UST SITE 21478,
MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA
AUGUST, 2005

Well ID	Date Sampled	Water Temp (°C)	Specific Conductivity (µS/cm)	pH	ORP/Eh (mV)	DO (mg/L)	Turbidity (NTU)
MW-01	NM	NM	NM	NM	NM	NM	NM
MW-02	08/10/05	23.47	1.69	6.24	132.3	3.74	2.50
MW-03	08/11/05	23.08	1.46	5.49	210.9	4.01	39.57
MW-04	08/10/05	24.29	3.18	6.37	373.2	2.49	0.52
OW-01	NM	NM	NM	NM	NM	NM	NM
OW-02	NM	NM	NM	NM	NM	NM	NM
OW-03	NM	NM	NM	NM	NM	NM	NM
RW-01	NM	NM	NM	NM	NM	NM	NM
RW-02	NM	NM	NM	NM	NM	NM	NM
RW-03	08/10/05	24.35	3.55	6.42	141.1	2.92	0.46
RW-04	NM	NM	NM	NM	NM	NM	NM

Notes:

NM = Not Monitored

ORP/Eh = Oxidation Reduction Potential

DO = Dissolved Oxygen

mV = Millivolts

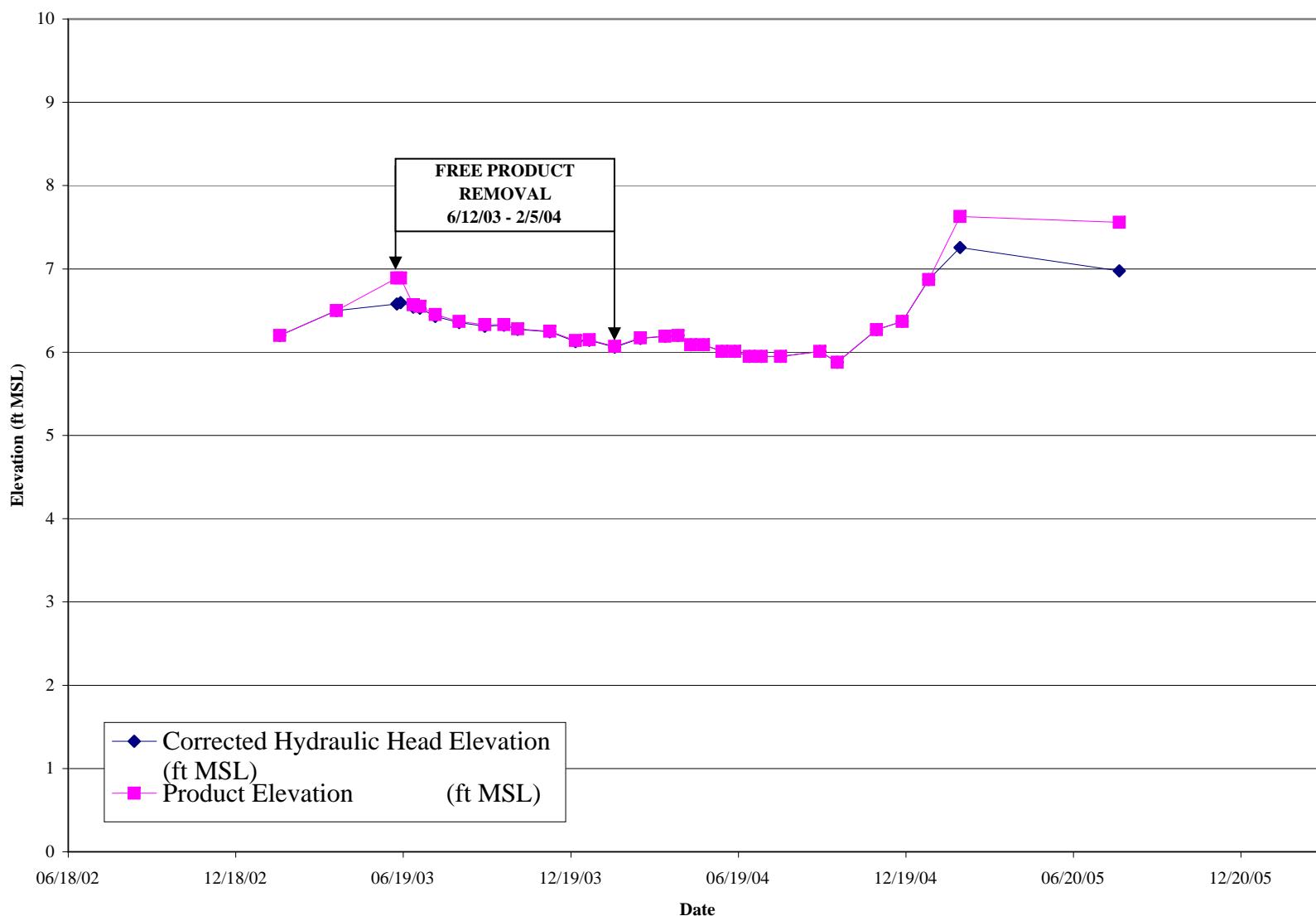
µS/cm =Microsiemens per Centimeter

°C = Degrees Centigrade

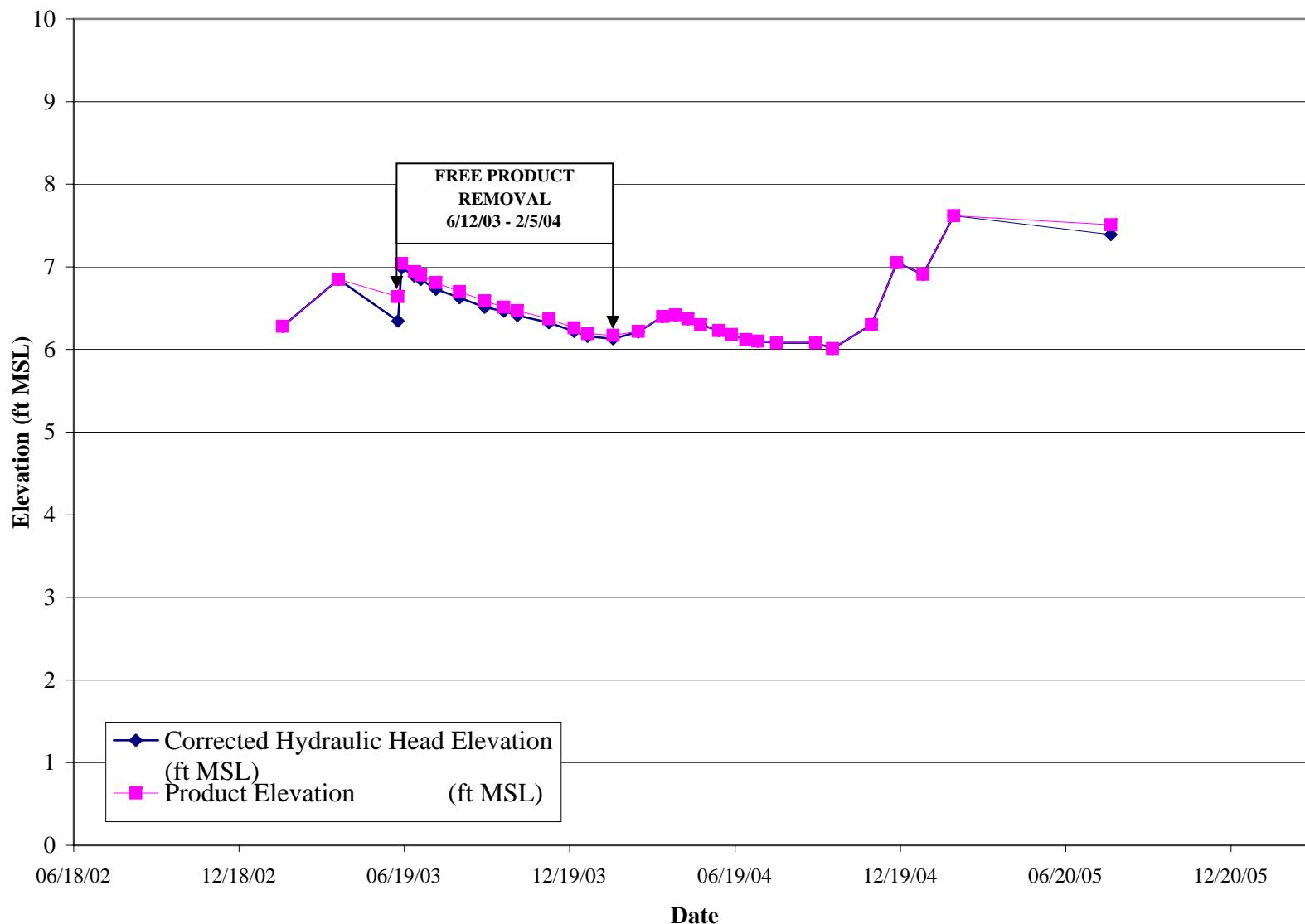
NTU = Nephelometric Turbidity Unit

HYDROGRAPHS

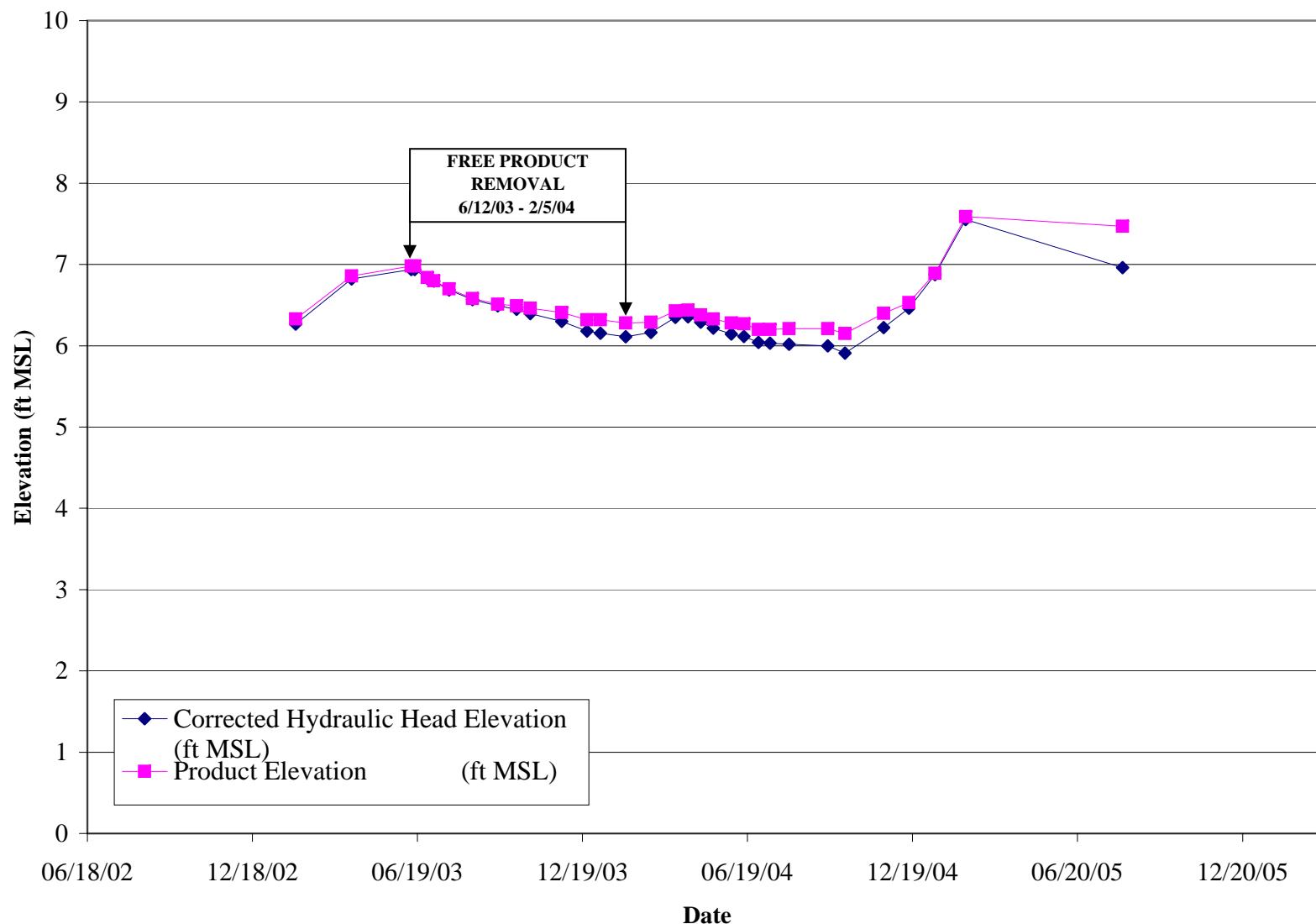
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OBSERVATION WELL OW-01
UST SITE 21478,
MARINE CORPS BASE
CAMP PENDLETON, CALIFORNIA



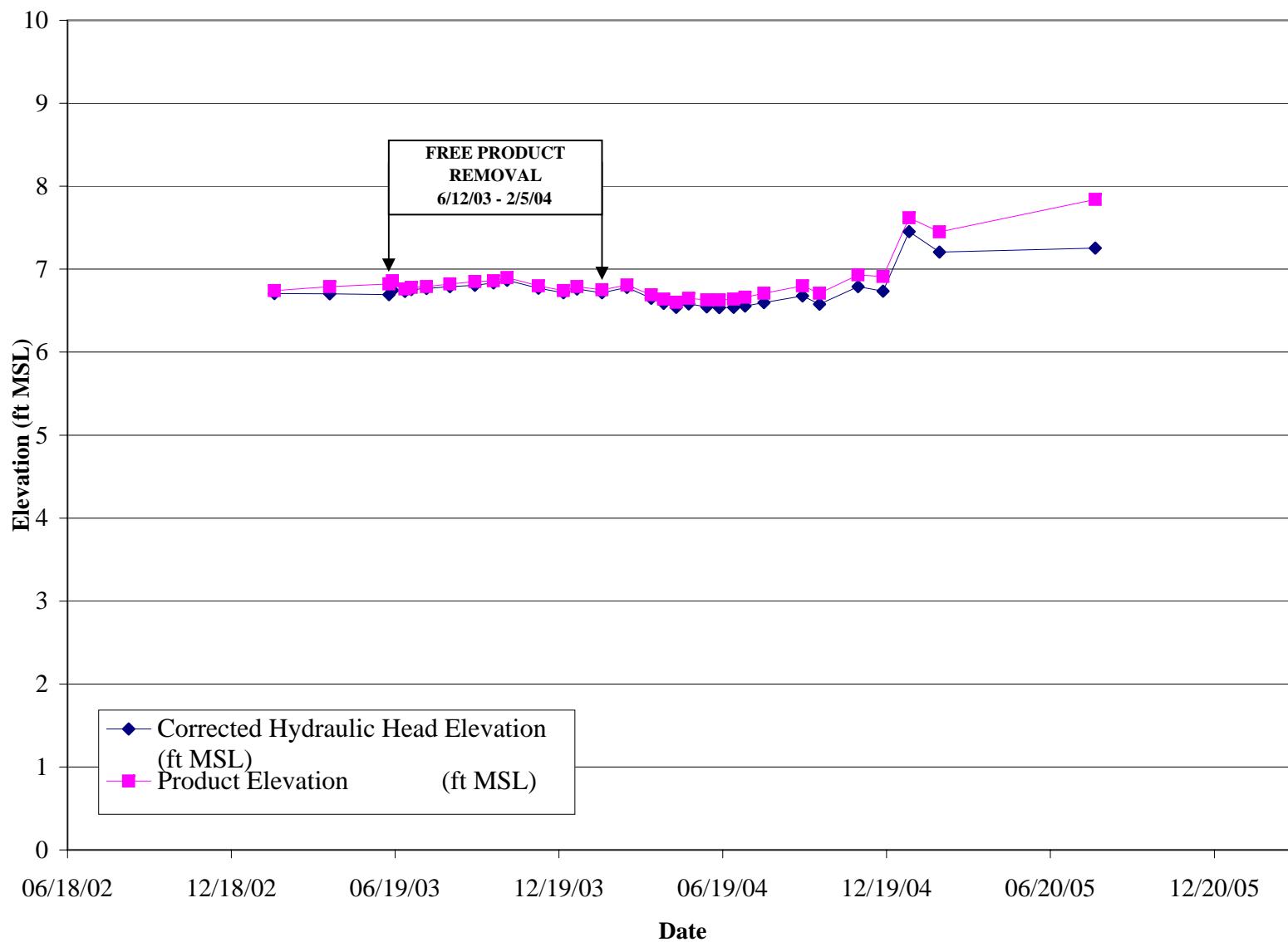
HYDROGRAPH 2-2
OBSERVATION WELL OW-02
UST SITE 21478,
MARINE CORPS BASE
CAMP PENDLETON, CALIFORNIA



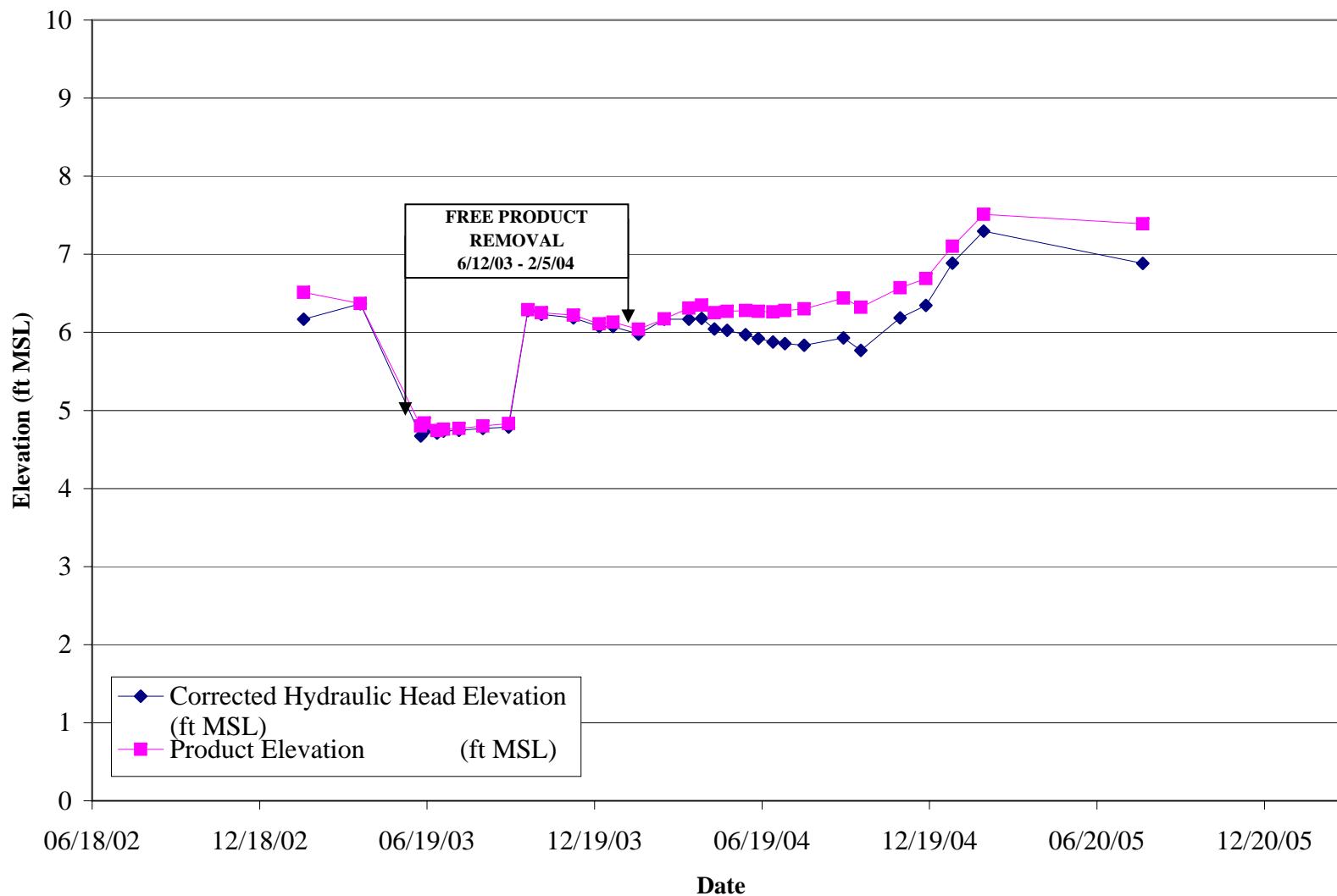
HYDROGRAPH 2-3
OBSERVATION WELL OW-03
UST SITE 21478,
MARINE CORPS BASE
CAMP PENDLETON, CALIFORNIA



HYDROGRAPH 2-4
OBSERVATION WELL RW-01
UST SITE 21478,
MARINE CORPS BASE
CAMP PENDLETON, CALIFORNIA



HYDROGRAPH 2-5
OBSERVATION WELL RW-02
UST SITE 21478,
MARINE CORPS BASE
CAMP PENDLETON, CALIFORNIA



APPENDIX A
GROUNDWATER/PRODUCT DEPTH FORM AND
GROUNDWATER SAMPLE COLLECTION LOG SHEETS

Groundwater/Product Depths

Project Name: UST Site 21478 - MCBCP

Project Number: 110122.0.001.001.41

Personnel:

Date Measured:

Well Number	Time Measured	TOC Elevation (MSL)	Depth to Product (Feet)	Depth to Water (Feet)	Product Thickness (Feet)	Total Depth (Feet)
RW4	0800			34.17		
MW3				31.28		
MW4				28.86		
RW3				42.62		
MW1	1355			47.33		
MW2				45.54		
OW1	1100	42.80	46.70	3.90		
OW2		42.60	43.40	.80	KTC	801.2
OW3		42.51	45.91	3.40	3.40	
RW2		43.00	46.39	3.39		
RW1	1145	44.57	48.48	3.91		

Comments: OWI-2-3 - RWI-2 measured w/ interphase probe
barled at approx 6 gallons of FP from
OWI

LOW FLOW WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Page _____ of _____

Project Name: _____
Project Number: _____
Well Number: _____
Date: _____
Field Personnel: _____
Weather
Materials: _____

UST Site 21478 - MCBP
110122.0.001.001.41
MWZ
B-10-05
Kangaroo-Carey-C
Dannehaye
Dedicated Tubing

Screen Interval (Depth in feet): 48.25
Pump Intake at (Depth in feet): _____
Purging Device: Portable Bladder Pump
Total Depth (feet): _____

Sample ID: 21478-MWQ
Sample Time: 1020

Comments: _____
Sampler Sign

signature: John

LOW FLOW WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Page of

Project Name:

Project Name:
Project Number:
WPS Number:

Well Number:

Date: _____

Weather Materials

UST Site 21478 - MCBCP

110122.0001.001.41

8-18.05
K-Tangon. Harry

Dedicated Tubing

UST Site 21478 - MCBCP
110122.0.001.001.41
8-18.8
D. W. B.
K-Tangon: Party C Haversack
gunny
Dedicated Tubing / Polyethylene

Screen Interval (Depth in feet)

Pump Intake at (Depth in feet)
Burgaring Device: Porta

Purifying Device. _____ Fulta
Total Depth (feet): _____

Teflon lined

Other _____

Disposable

Teflon Lined

Polyethylene

Sample ID: 2478-KW3
Sample Time: 12:25

Comments: _____
Sampler Sign

LOW-FLOW WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

~~KTC~~ 1145

~~Page of KT C~~

UST Site 21478 - MCBCP
1110122.0.001.001.41
~~1110122.0.001.001.41~~
~~8-10-05~~
~~MICROM-MONEY~~

Project Name: _____
Project Number: _____
Well Number: _____
Date: _____
Field Personnel: _____
Weather: _____
Materials: _____

Screen Interval (Depth in feet): _____
Pump Intake at (Depth in feet): _____
Purging Device: _____ Portable
Total Depth (feet): _____

~~8-10:00 AM - COREY & HANNAH~~

Dedicated Tubing

Dedicated Tubing

Polyethylene

1

Teflon Lin

ed

Disposable

Other _____

Clock Time 24 Hr:	Water Depth Below TOC ft	Pump Dial	Pumping Rate (L/min) <0.5	Cum. Volume Purged (liters)	Temp (°C)	Conductivity (µS/cm) (±3%)	pH (±0.2)	ORP/Eh (mV) (±10%)	DO (mg/L) (±10%)	Turbidity (NTU) (±10%)	Comments
1350 1400	28.49	25	8/7 200		24.90	2.90	6.55	376.5	6.33	1.82	
1355	28.49	25	8/7 200		24.70	2.36	6.43	377.2	6.48	0.58	
1400	28.49	25	8/7 200		24.58	2.56	6.38	379.8	6.16	0.49	
1405	28.49	25	8/7 200		24.67	2.178	6.35	379.1	5.52	0.69	
1410	28.49	25	8/7 200		24.58	2.89	6.33	377.9	5.10	0.40	
1415	28.49	25	8/7 200		24.61	2.97	6.31	377.7	4.75	0.60	
1420	28.50	25	8/7 200		24.56	3.31	6.31	377.7	3.84	0.33	
1425	28.50	25	8/7 200		24.54	3.22	6.33	376.3	2.64	0.48	
1430	28.49	25	8/7 200		24.69	3.19	6.35	374.0	2.57	0.58	
1435	28.50	25	8/7 200		24.29	3.18	6.37	373.2	2.49	0.52	

卷之三

Comments: ✓

Sample ID: 1475
Sample Time:

LOW FLOW WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Page _____ of _____

Project Name: UST Site 21478 - MCBP
Project Number: 110122.0.001.001.41
Well Number: (S-1)

UST Site 21478 - MCBP
110122.0.001.001.41

Date: _____
Field Personnel: _____

Weather
Materials:

Screen Interval (Depth in feet): _____
Pump Intake at (Depth in feet): _____
Purging Device: _____ **Portab.**
Total Depth (feet): _____

Screen Interval (Depth in feet): _____
Pump Intake at (Depth in feet): _____

Purging Device: _____ Portable Bladder Pump

Total Depth (feet):

Dedicated Tubing

Polyethyl

Teflon Lined

ned

Disposable

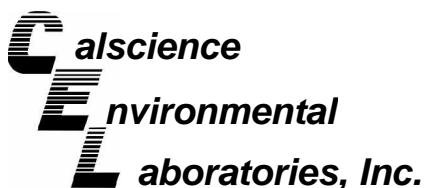
1

-10-

Sample ID: 2478-owl 1340
Sample Time:

Comments: _____

**APPENDIX B
LABORATORY ANALYTICAL REPORTS**



August 22, 2005

Hamide Kayaci
Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

Subject: **Calscience Work Order No.: 05-08-0772**
Client Reference: **Camp Pendleton UST 21478**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 8/10/2005 and analyzed in accordance with the attached chain-of-custody.

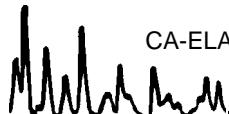
Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

A handwritten signature in black ink that reads "Marycarol Valenzuela".

Calscience Environmental
Laboratories, Inc.
Marycarol Valenzuela
Project Manager



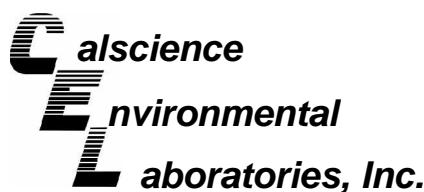
CA-ELAP ID: 1230

NELAP ID: 03220CA

CSDLAC ID: 10109

SCAQMD ID: 93LA0830

7440 Lincoln Way, Garden Grove, CA 92841-1427 · TEL:(714) 895-5494 · FAX: (714) 894-7501



Analytical Report



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

Date Received: 08/10/05
Work Order No: 05-08-0772
Preparation: N/A
Method: RSK-175M
Units: ug/L

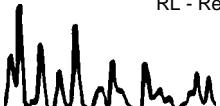
Project: Camp Pendleton UST 21478

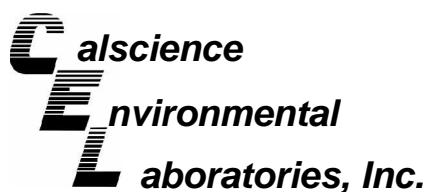
Page 1 of 1

Client Sample Number	Lab Sample Number		Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID		
21478-MW2	05-08-0772-2		08/10/05	Aqueous	N/A	08/12/05	050812L02		
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>
Methane	ND	1.00	1		Ethylene	ND	1.00	1	
Ethane	ND	1.00	1						
21478-RW3	05-08-0772-3		08/10/05	Aqueous	N/A	08/12/05	050812L02		
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>
Methane	ND	1.00	1		Ethylene	ND	1.00	1	
Ethane	ND	1.00	1						
21478-QCFB	05-08-0772-4		08/10/05	Aqueous	N/A	08/12/05	050812L02		
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>
Methane	ND	1.00	1		Ethylene	ND	1.00	1	
Ethane	ND	1.00	1						
21478-QCEB	05-08-0772-5		08/10/05	Aqueous	N/A	08/12/05	050812L02		
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>
Methane	ND	1.00	1		Ethylene	ND	1.00	1	
Ethane	ND	1.00	1						
21478-MW4	05-08-0772-6		08/10/05	Aqueous	N/A	08/12/05	050812L02		
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>
Methane	56.2	1.0	1		Ethylene	ND	1.00	1	
Ethane	ND	1.00	1						
Method Blank	099-12-010-1,063		N/A	Aqueous	N/A	08/12/05	050812L02		
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>
Methane	ND	1.00	1		Ethylene	ND	1.00	1	
Ethane	ND	1.00	1						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

7440 Lincoln Way, Garden Grove, CA 92841-1427 · TEL:(714) 895-5494 · FAX: (714) 894-7501





Analytical Report



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

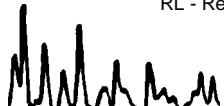
Date Received: 08/10/05
Work Order No: 05-08-0772
Preparation: EPA 3010A Total
Method: EPA 6010B
Units: mg/L

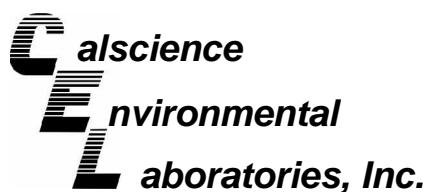
Project: Camp Pendleton UST 21478

Page 1 of 1

Client Sample Number	Lab Sample Number		Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID		
21478-MW2	05-08-0772-2		08/10/05	Aqueous	08/11/05	08/12/05	050811L08		
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>
Iron	ND	0.100	1		Manganese	0.0310	0.0050	1	
21478-RW3	05-08-0772-3		08/10/05	Aqueous	08/11/05	08/12/05	050811L08		
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>
Iron	ND	0.100	1		Manganese	ND	0.00500	1	
21478-QCFB	05-08-0772-4		08/10/05	Aqueous	08/11/05	08/12/05	050811L08		
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>
Iron	ND	0.100	1		Manganese	ND	0.00500	1	
21478-QCEB	05-08-0772-5		08/10/05	Aqueous	08/11/05	08/12/05	050811L08		
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>
Iron	ND	0.100	1		Manganese	0.0282	0.0050	1	
21478-MW4	05-08-0772-6		08/10/05	Aqueous	08/11/05	08/12/05	050811L08		
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>
Iron	ND	0.100	1		Manganese	0.0751	0.0050	1	
Method Blank	097-01-003-5,218		N/A	Aqueous	08/11/05	08/12/05	050811L08		
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>
Iron	ND	0.100	1		Manganese	ND	0.00500	1	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers





Analytical Report



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

Date Received: 08/10/05
Work Order No: 05-08-0772
Preparation: EPA 5030B
Method: EPA 8021B
Units: ug/L

Project: Camp Pendleton UST 21478

Page 1 of 2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
21478-QCTB	05-08-0772-1	08/10/05	Aqueous	08/18/05	08/18/05	050816B01

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Benzene	ND	0.30	0.14	1		Xylenes (total)	ND	0.30	0.24	1	
Toluene	ND	0.30	0.17	1		Methyl-t-Butyl Ether (MTBE)	ND	5.0	0.64	1	
Ethylbenzene	ND	0.30	0.17	1							
Surrogates:	REC (%)	Control Limits			Qual						
1,4-Bromofluorobenzene	94	80-116									

21478-MW2	05-08-0772-2	08/10/05	Aqueous	08/16/05	08/16/05	050816B01
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Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Benzene	ND	0.30	0.14	1		Xylenes (total)	ND	0.30	0.24	1	
Toluene	ND	0.30	0.17	1		Methyl-t-Butyl Ether (MTBE)	ND	5.0	0.64	1	
Ethylbenzene	ND	0.30	0.17	1							
Surrogates:	REC (%)	Control Limits			Qual						
1,4-Bromofluorobenzene	100	80-116									

21478-RW3	05-08-0772-3	08/10/05	Aqueous	08/16/05	08/16/05	050816B01
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Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Benzene	0.24	0.30	0.14	1	J	Xylenes (total)	2.5	0.3	0.24	1	
Toluene	0.70	0.30	0.17	1		Methyl-t-Butyl Ether (MTBE)	3.1	5.0	0.64	1	J
Ethylbenzene	0.58	0.30	0.17	1							
Surrogates:	REC (%)	Control Limits			Qual						
1,4-Bromofluorobenzene	101	80-116									

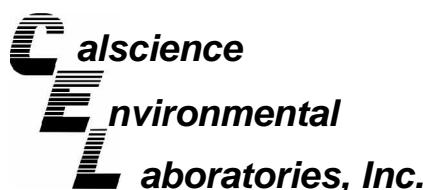
21478-QCFB	05-08-0772-4	08/10/05	Aqueous	08/16/05	08/17/05	050816B01
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Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Benzene	ND	0.30	0.14	1		Xylenes (total)	ND	0.30	0.24	1	
Toluene	0.75	0.30	0.17	1		Methyl-t-Butyl Ether (MTBE)	1.6	5.0	0.64	1	J
Ethylbenzene	ND	0.30	0.17	1							
Surrogates:	REC (%)	Control Limits			Qual						
1,4-Bromofluorobenzene	98	80-116									

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

7440 Lincoln Way, Garden Grove, CA 92841-1427 · TEL:(714) 895-5494 · FAX: (714) 894-7501



Analytical Report



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

Date Received: 08/10/05
Work Order No: 05-08-0772
Preparation: EPA 5030B
Method: EPA 8021B
Units: ug/L

Project: Camp Pendleton UST 21478

Page 2 of 2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
21478-QCEB	05-08-0772-5	08/10/05	Aqueous	08/16/05	08/17/05	050816B01

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Benzene	0.22	0.30	0.14	1	J	Xylenes (total)	2.7	0.3	0.24	1	
Toluene	1.5	0.3	0.17	1		Methyl-t-Butyl Ether (MTBE)	2.0	5.0	0.64	1	J
Ethylbenzene	0.41	0.30	0.17	1							
Surrogates:	REC (%)	Control Limits			Qual						
1,4-Bromofluorobenzene	102	80-116									

21478-MW4	05-08-0772-6	08/10/05	Aqueous	08/16/05	08/17/05	050816B01
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Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Benzene	ND	0.30	0.14	1		Xylenes (total)	0.32	0.30	0.24	1	
Toluene	0.24	0.30	0.17	1	J	Methyl-t-Butyl Ether (MTBE)	2.5	5.0	0.64	1	J
Ethylbenzene	ND	0.30	0.17	1							
Surrogates:	REC (%)	Control Limits			Qual						
1,4-Bromofluorobenzene	103	80-116									

Method Blank	098-01-003-3,663	N/A	Aqueous	08/16/05	08/16/05	050816B01
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Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Benzene	ND	0.30	0.14	1		Xylenes (total)	ND	0.30	0.24	1	
Toluene	ND	0.30	0.17	1		Methyl-t-Butyl Ether (MTBE)	ND	5.0	0.64	1	
Ethylbenzene	ND	0.30	0.17	1							
Surrogates:	REC (%)	Control Limits			Qual						
1,4-Bromofluorobenzene	100	80-116									

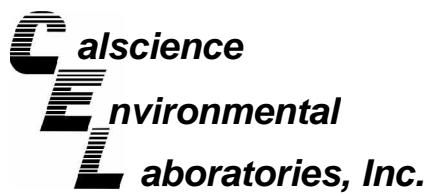
Method Blank	098-01-003-3,666	N/A	Aqueous	08/18/05	08/18/05	050818B01
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Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Benzene	ND	0.30	0.14	1		Xylenes (total)	ND	0.30	0.24	1	
Toluene	ND	0.30	0.17	1		Methyl-t-Butyl Ether (MTBE)	ND	5.0	0.64	1	
Ethylbenzene	ND	0.30	0.17	1							
Surrogates:	REC (%)	Control Limits			Qual						
1,4-Bromofluorobenzene	98	80-116									

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

7440 Lincoln Way, Garden Grove, CA 92841-1427 · TEL:(714) 895-5494 · FAX: (714) 894-7501



Analytical Report



Anteon Corp. Date Received: 08/10/05
 3430 Camino Del Rio North Work Order No: 05-08-0772
 San Diego, CA 92108-1701 Preparation: EPA 3510C
 Method: DHS LUFT

Project: Camp Pendleton UST 21478

Page 1 of 2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
21478-MW2	05-08-0772-2	08/10/05	Aqueous	08/12/05	08/13/05	050812B24

Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	500	1		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
Decachlorobiphenyl	111	51-141			

21478-RW3	05-08-0772-3	08/10/05	Aqueous	08/12/05	08/13/05	050812B24
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	500	1		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
Decachlorobiphenyl	111	51-141			

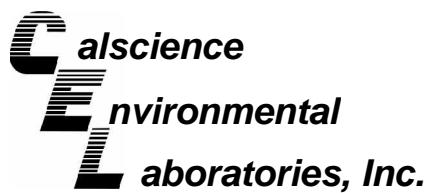
21478-QCFB	05-08-0772-4	08/10/05	Aqueous	08/12/05	08/13/05	050812B24
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	500	1		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
Decachlorobiphenyl	106	51-141			

21478-QCEB	05-08-0772-5	08/10/05	Aqueous	08/12/05	08/13/05	050812B24
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	500	1		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
Decachlorobiphenyl	110	51-141			

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Anteon Corp. 3430 Camino Del Rio North San Diego, CA 92108-1701	Date Received: Work Order No: Preparation: Method:	08/10/05 05-08-0772 EPA 3510C DHS LUFT
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Project: Camp Pendleton UST 21478

Page 2 of 2

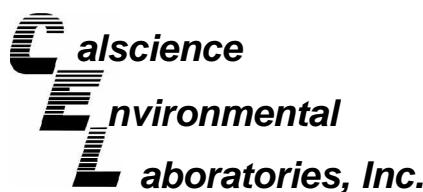
Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
21478-MW4	05-08-0772-6	08/10/05	Aqueous	08/12/05	08/13/05	050812B24

Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	500	1		ug/L
<u>Surrogates:</u>					
Decachlorobiphenyl	104	51-141			

Method Blank	098-03-039-816	N/A	Aqueous	08/12/05	08/13/05	050812B24
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	500	1		ug/L
<u>Surrogates:</u>					
Decachlorobiphenyl	96	51-141			

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

Date Received: 08/10/05
Work Order No: 05-08-0772
Preparation: EPA 3510B
Method: EPA 8310
Units: ug/L

Project: Camp Pendleton UST 21478

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Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
21478-MW2	05-08-0772-2	08/10/05	Aqueous	08/15/05	08/16/05	050815L06

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Naphthalene	ND	1.0	1		Benzo (a) Anthracene	ND	1.0	1	
Acenaphthylene	ND	1.0	1		Chrysene	ND	1.0	1	
Acenaphthene	ND	1.0	1		Benzo (b) Fluoranthene	ND	1.0	1	
Fluorene	ND	1.0	1		Benzo (k) Fluoranthene	ND	1.0	1	
Phenanthrene	ND	1.0	1		Benzo (a) Pyrene	ND	0.20	1	
Anthracene	ND	1.0	1		Dibenz (a,h) Anthracene	ND	1.0	1	
Fluoranthene	ND	1.0	1		Benzo (g,h,i) Perylene	ND	1.0	1	
Pyrene	ND	1.0	1		Indeno (1,2,3-c,d) Pyrene	ND	1.0	1	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control</u>		<u>Qual</u>					
Decafluorobiphenyl	65	40-160							

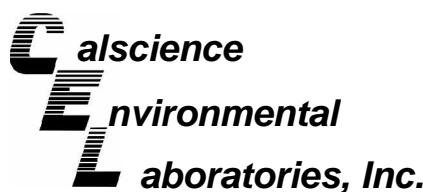
21478-RW3	05-08-0772-3	08/10/05	Aqueous	08/15/05	08/16/05	050815L06
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Naphthalene	ND	1.0	1		Benzo (a) Anthracene	ND	1.0	1	
Acenaphthylene	ND	1.0	1		Chrysene	ND	1.0	1	
Acenaphthene	ND	1.0	1		Benzo (b) Fluoranthene	ND	1.0	1	
Fluorene	ND	1.0	1		Benzo (k) Fluoranthene	ND	1.0	1	
Phenanthrene	ND	1.0	1		Benzo (a) Pyrene	ND	0.20	1	
Anthracene	ND	1.0	1		Dibenz (a,h) Anthracene	ND	1.0	1	
Fluoranthene	ND	1.0	1		Benzo (g,h,i) Perylene	ND	1.0	1	
Pyrene	ND	1.0	1		Indeno (1,2,3-c,d) Pyrene	ND	1.0	1	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control</u>		<u>Qual</u>					
Decafluorobiphenyl	72	40-160							

21478-QCFB	05-08-0772-4	08/10/05	Aqueous	08/15/05	08/16/05	050815L06
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Naphthalene	ND	1.0	1		Benzo (a) Anthracene	ND	1.0	1	
Acenaphthylene	ND	1.0	1		Chrysene	ND	1.0	1	
Acenaphthene	ND	1.0	1		Benzo (b) Fluoranthene	ND	1.0	1	
Fluorene	ND	1.0	1		Benzo (k) Fluoranthene	ND	1.0	1	
Phenanthrene	ND	1.0	1		Benzo (a) Pyrene	ND	0.20	1	
Anthracene	ND	1.0	1		Dibenz (a,h) Anthracene	ND	1.0	1	
Fluoranthene	ND	1.0	1		Benzo (g,h,i) Perylene	ND	1.0	1	
Pyrene	ND	1.0	1		Indeno (1,2,3-c,d) Pyrene	ND	1.0	1	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control</u>		<u>Qual</u>					
Decafluorobiphenyl	70	40-160							

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

Date Received: 08/10/05
Work Order No: 05-08-0772
Preparation: EPA 3510B
Method: EPA 8310
Units: ug/L

Project: Camp Pendleton UST 21478

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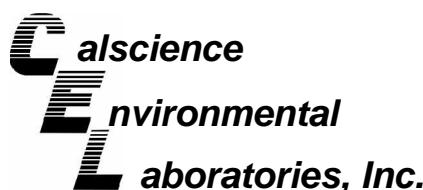
Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
21478-QCEB	05-08-0772-5	08/10/05	Aqueous	08/15/05	08/16/05	050815L06

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Naphthalene	ND	1.0	1		Benzo (a) Anthracene	ND	1.0	1	
Acenaphthylene	ND	1.0	1		Chrysene	ND	1.0	1	
Acenaphthene	ND	1.0	1		Benzo (b) Fluoranthene	ND	1.0	1	
Fluorene	ND	1.0	1		Benzo (k) Fluoranthene	ND	1.0	1	
Phenanthrene	ND	1.0	1		Benzo (a) Pyrene	ND	0.20	1	
Anthracene	ND	1.0	1		Dibenz (a,h) Anthracene	ND	1.0	1	
Fluoranthene	ND	1.0	1		Benzo (g,h,i) Perylene	ND	1.0	1	
Pyrene	ND	1.0	1		Indeno (1,2,3-c,d) Pyrene	ND	1.0	1	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control</u>		<u>Qual</u>					
Decafluorobiphenyl	65	40-160							

21478-MW4	05-08-0772-6	08/10/05	Aqueous	08/15/05	08/16/05	050815L06			
Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Naphthalene	ND	1.0	1		Benzo (a) Anthracene	ND	1.0	1	
Acenaphthylene	ND	1.0	1		Chrysene	ND	1.0	1	
Acenaphthene	ND	1.0	1		Benzo (b) Fluoranthene	ND	1.0	1	
Fluorene	ND	1.0	1		Benzo (k) Fluoranthene	ND	1.0	1	
Phenanthrene	ND	1.0	1		Benzo (a) Pyrene	ND	0.20	1	
Anthracene	ND	1.0	1		Dibenz (a,h) Anthracene	ND	1.0	1	
Fluoranthene	ND	1.0	1		Benzo (g,h,i) Perylene	ND	1.0	1	
Pyrene	ND	1.0	1		Indeno (1,2,3-c,d) Pyrene	ND	1.0	1	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control</u>		<u>Qual</u>					
Decafluorobiphenyl	61	40-160							

Method Blank	099-07-006-142	N/A	Aqueous	08/15/05	08/16/05	050815L06			
Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Naphthalene	ND	1.0	1		Benzo (a) Anthracene	ND	1.0	1	
Acenaphthylene	ND	1.0	1		Chrysene	ND	1.0	1	
Acenaphthene	ND	1.0	1		Benzo (b) Fluoranthene	ND	1.0	1	
Fluorene	ND	1.0	1		Benzo (k) Fluoranthene	ND	1.0	1	
Phenanthrene	ND	1.0	1		Benzo (a) Pyrene	ND	0.20	1	
Anthracene	ND	1.0	1		Dibenz (a,h) Anthracene	ND	1.0	1	
Fluoranthene	ND	1.0	1		Benzo (g,h,i) Perylene	ND	1.0	1	
Pyrene	ND	1.0	1		Indeno (1,2,3-c,d) Pyrene	ND	1.0	1	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control</u>		<u>Qual</u>					
Decafluorobiphenyl	94	40-160							

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

Date Received: 08/10/05
Work Order No: 05-08-0772

Project: Camp Pendleton UST 21478

Page 1 of 2

Client Sample Number	Lab Sample Number	Date Collected	Matrix
21478-MW2	05-08-0772-2	08/10/05	Aqueous

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Nitrite (as N)	ND	0.10	1		mg/L	N/A	08/11/05	EPA 300.0
Nitrate (as N)	4.0	0.1	1		mg/L	N/A	08/11/05	EPA 300.0
Sulfate	170	50	50		mg/L	N/A	08/11/05	EPA 300.0
Sulfide, Total	ND	0.050	1		mg/L	N/A	08/15/05	EPA 376.2
Alkalinity, Total (as CaCO ₃)	280	5.0	1		mg/L	N/A	08/12/05	SM 2320B
Iron (II)	ND	0.10	1		mg/L	N/A	08/10/05	SM3500-FeD

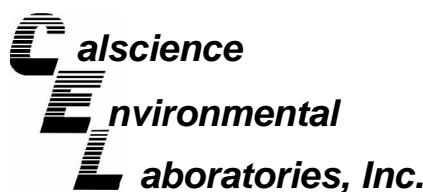
21478-RW3	05-08-0772-3	08/10/05	Aqueous
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Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Nitrite (as N)	ND	0.10	1		mg/L	N/A	08/11/05	EPA 300.0
Nitrate (as N)	4.9	0.1	1		mg/L	N/A	08/11/05	EPA 300.0
Sulfate	150	50	50		mg/L	N/A	08/11/05	EPA 300.0
Sulfide, Total	ND	0.050	1		mg/L	N/A	08/15/05	EPA 376.2
Alkalinity, Total (as CaCO ₃)	360	5.0	1		mg/L	N/A	08/12/05	SM 2320B
Iron (II)	ND	0.10	1		mg/L	N/A	08/10/05	SM3500-FeD

21478-QCFB	05-08-0772-4	08/10/05	Aqueous
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Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Nitrite (as N)	ND	0.10	1		mg/L	N/A	08/11/05	EPA 300.0
Nitrate (as N)	ND	0.10	1		mg/L	N/A	08/11/05	EPA 300.0
Sulfate	2.4	1.0	1		mg/L	N/A	08/11/05	EPA 300.0
Sulfide, Total	ND	0.050	1		mg/L	N/A	08/15/05	EPA 376.2
Alkalinity, Total (as CaCO ₃)	2.0	1.0	1		mg/L	N/A	08/12/05	SM 2320B
Iron (II)	ND	0.10	1		mg/L	N/A	08/10/05	SM3500-FeD

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

Date Received: 08/10/05
Work Order No: 05-08-0772

Project: Camp Pendleton UST 21478

Page 2 of 2

Client Sample Number	Lab Sample Number	Date Collected	Matrix
21478-QCEB	05-08-0772-5	08/10/05	Aqueous

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Nitrite (as N)	ND	0.10	1		mg/L	N/A	08/11/05	EPA 300.0
Nitrate (as N)	ND	0.10	1		mg/L	N/A	08/11/05	EPA 300.0
Sulfate	2.4	1.0	1		mg/L	N/A	08/11/05	EPA 300.0
Sulfide, Total	ND	0.050	1		mg/L	N/A	08/15/05	EPA 376.2
Alkalinity, Total (as CaCO ₃)	ND	1.0	1		mg/L	N/A	08/12/05	SM 2320B
Iron (II)	ND	0.10	1		mg/L	N/A	08/10/05	SM3500-FeD

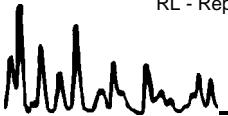
21478-MW4	05-08-0772-6	08/10/05	Aqueous
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Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Nitrite (as N)	ND	0.10	1		mg/L	N/A	08/11/05	EPA 300.0
Nitrate (as N)	3.4	0.1	1		mg/L	N/A	08/11/05	EPA 300.0
Sulfate	140	50	50		mg/L	N/A	08/11/05	EPA 300.0
Sulfide, Total	ND	0.050	1		mg/L	N/A	08/15/05	EPA 376.2
Alkalinity, Total (as CaCO ₃)	300	5.0	1		mg/L	N/A	08/12/05	SM 2320B
Iron (II)	ND	0.10	1		mg/L	N/A	08/10/05	SM3500-FeD

Method Blank	N/A	Aqueous
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Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Nitrite (as N)	ND	0.10	1		mg/L	N/A	08/11/05	EPA 300.0
Nitrate (as N)	ND	0.10	1		mg/L	N/A	08/11/05	EPA 300.0
Sulfate	ND	1.0	1		mg/L	N/A	08/11/05	EPA 300.0
Sulfide, Total	ND	0.050	1		mg/L	N/A	08/15/05	EPA 376.2
Iron (II)	ND	0.10	1		mg/L	N/A	08/10/05	SM3500-FeD

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

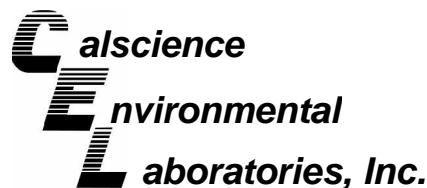


ANALYTICAL REPORT

Anteon Corp. 3430 Camino Del Rio North San Diego, CA 92108-1701	Date Sampled: 08/10/05 Date Received: 08/10/05 Date Digested: 08/11/05 Date Analyzed: 08/12/05 Work Order No.: 05-08-0772 Method: EPA 6010B Page 1 of 1
Attn: Hamide Kayaci RE: Camp Pendleton UST 21478	

All concentrations are reported in mg/L (ppm).

<u>Sample Number</u>	<u>Ferric Iron Concentration</u>	<u>Reporting Limit</u>
21478-MW2	ND	0.100
21478-RW3	ND	0.100
21478-QCFB	ND	0.100
21478-QCEB	ND	0.100
21478-MW4	ND	0.100



Quality Control - Spike/Spike Duplicate



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

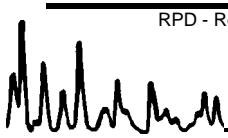
Date Received: 08/10/05
Work Order No: 05-08-0772
Preparation: EPA 3010A Total
Method: EPA 6010B

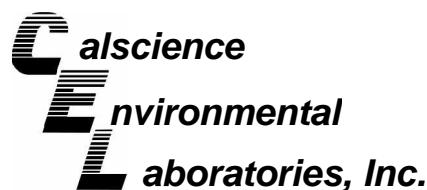
Project Camp Pendleton UST 21478

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
21478-MW2	Aqueous	ICP 3300	08/11/05	08/12/05	050811S08

Parameter	<u>MS %REC</u>	<u>MSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Iron	74	114	80-120	43	0-20	3,4
Manganese	99	100	80-120	0	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - Spike/Spike Duplicate



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

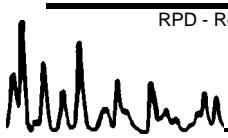
Date Received: 08/10/05
Work Order No: 05-08-0772
Preparation: EPA 5030B
Method: EPA 8021B

Project Camp Pendleton UST 21478

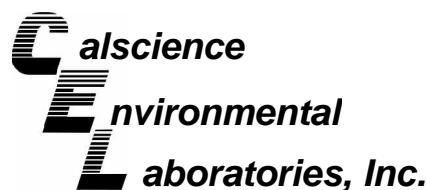
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
21478-MW2	Aqueous	GC 8	08/16/05	08/17/05	050816S01

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	113	112	73-109	1	0-9	3
Toluene	107	106	74-104	2	0-11	3
Ethylbenzene	115	113	77-107	2	0-11	3
p/m-Xylene	111	106	74-110	5	0-12	3
o-Xylene	111	108	75-105	3	0-14	3
Methyl-t-Butyl Ether (MTBE)	131	132	74-128	1	0-13	3

RPD - Relative Percent Difference , CL - Control Limit



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Quality Control - Spike/Spike Duplicate



Anteon Corp.
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San Diego, CA 92108-1701

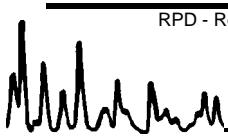
Date Received: 08/10/05
Work Order No: 05-08-0772
Preparation: EPA 5030B
Method: EPA 8021B

Project Camp Pendleton UST 21478

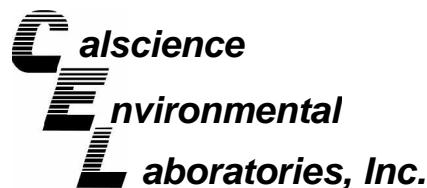
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
05-08-0969-6	Aqueous	GC 8	08/18/05	08/18/05	050818S01

Parameter	<u>MS %REC</u>	<u>MSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Benzene	105	105	73-109	0	0-9	
Toluene	99	99	74-104	0	0-11	
Ethylbenzene	109	110	77-107	1	0-11	3
p/m-Xylene	108	108	74-110	1	0-12	
o-Xylene	104	106	75-105	1	0-14	3
Methyl-t-Butyl Ether (MTBE)	109	108	74-128	1	0-13	

RPD - Relative Percent Difference , CL - Control Limit



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Quality Control - Spike/Spike Duplicate



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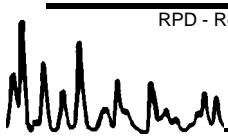
Date Received: 08/10/05
Work Order No: 05-08-0772
Preparation: EPA 3510C
Method: DHS LUFT

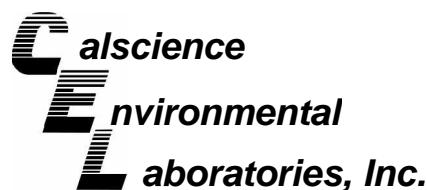
Project Camp Pendleton UST 21478

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
21478-MW2	Aqueous	GC 2	08/12/05	08/13/05	050812S24

Parameter	<u>MS %REC</u>	<u>MSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Diesel	112	113	55-133	0	0-30	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - Spike/Spike Duplicate



Anteon Corp.
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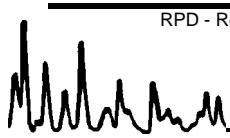
Date Received: 08/10/05
Work Order No: 05-08-0772
Preparation: EPA 3510B
Method: EPA 8310

Project Camp Pendleton UST 21478

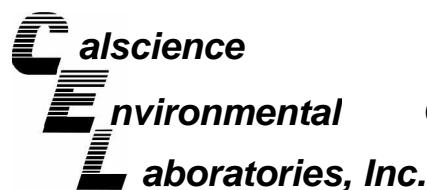
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
21478-MW2	Aqueous	HPLC 5	08/15/05	08/16/05	050815S06

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzo (b) Fluoranthene	109	107	40-160	2	0-20	
Benzo (k) Fluoranthene	113	111	40-160	1	0-20	
Benzo (a) Pyrene	116	116	40-160	1	0-20	
Dibenz (a,h) Anthracene	112	112	40-160	1	0-20	
Benzo (g,h,i) Perylene	112	111	40-160	1	0-20	
Indeno (1,2,3-c,d) Pyrene	103	101	40-160	1	0-20	

RPD - Relative Percent Difference , CL - Control Limit



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Quality Control - Spike/Spike Duplicate



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

Date Received: N/A
Work Order No: 05-08-0772

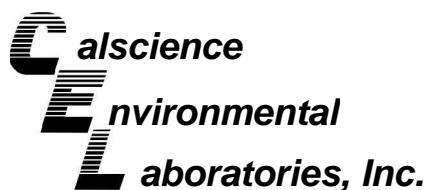
Project: Camp Pendleton UST 21478

Matrix: Aqueous

Parameter	Method	Quality Control Sample ID	Date Analyzed	Date Extracted	MS% REC	MSD % REC	%REC CL	RPD	RPD CL	Qualifiers
Nitrite (as N)	EPA 300.0	21478-MW2	08/11/05	N/A	94	95	68-122	0	0-8	
Nitrate (as N)	EPA 300.0	21478-MW2	08/11/05	N/A	100	99	58-142	0	0-6	
Sulfate	EPA 300.0	21478-MW2	08/11/05	N/A	103	102	49-133	0	0-3	
Iron (II)	SM3500-FeD	21478-MW2	08/10/05	N/A	106	107	70-130	1	0-25	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - Duplicate



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

Date Received: N/A
Work Order No: 05-08-0772

Project: Camp Pendleton UST 21478

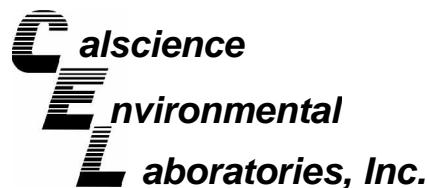
Matrix: Aqueous

Parameter	Method	QC Sample ID	Date Analyzed	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Alkalinity, Total (as CaCO ₃)	SM 2320B	05-08-0902-5	08/12/05	720	720	1	0-25	
Bicarbonate (as CaCO ₃)	SM 2320B	05-08-0902-5	08/12/05	720	720	0	0-25	
Carbonate (as CaCO ₃)	SM 2320B	05-08-0902-5	08/12/05	ND	ND	NA	0-25	
Hydroxide (as CaCO ₃)	SM 2320B	05-08-0902-5	08/12/05	ND	ND	NA	0-25	
Sulfide, Total	EPA 376.2	21478-MW2	08/15/05	ND	ND	NA	0-25	

RPD - Relative Percent Difference , CL - Control Limit



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Quality Control - LCS/LCS Duplicate



Anteon Corp.
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San Diego, CA 92108-1701

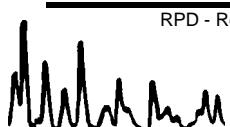
Date Received: N/A
Work Order No: 05-08-0772
Preparation: N/A
Method: RSK-175M

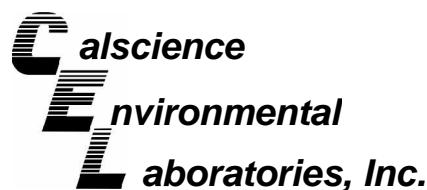
Project: Camp Pendleton UST 21478

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-1,063	Aqueous	GC 33	N/A	08/12/05	050812L02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	100	95	79-109	5	0-20	
Ethane	100	96	80-120	4	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Anteon Corp.
3430 Camino Del Rio North
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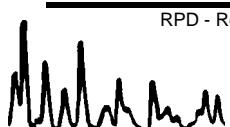
Date Received: N/A
Work Order No: 05-08-0772
Preparation: EPA 3010A Total
Method: EPA 6010B

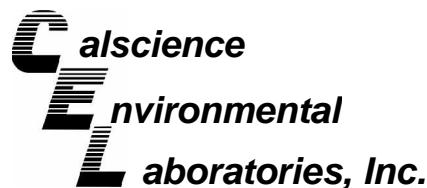
Project: Camp Pendleton UST 21478

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
097-01-003-5,218	Aqueous	ICP 3300	08/11/05	08/12/05	050811L08

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Iron	97	98	80-120	0	0-20	
Manganese	99	98	80-120	1	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

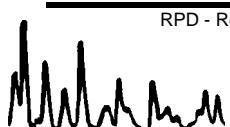
Date Received: N/A
Work Order No: 05-08-0772
Preparation: EPA 5030B
Method: EPA 8021B

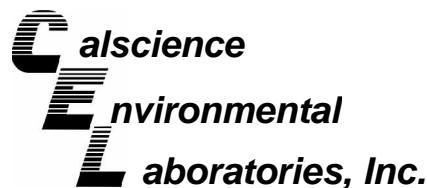
Project: Camp Pendleton UST 21478

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
098-01-003-3,663	Aqueous	GC 8	08/16/05	08/16/05	050816B01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	108	111	70-118	3	0-9	
Toluene	102	105	66-114	4	0-9	
Ethylbenzene	109	113	72-114	4	0-9	
p/m-Xylene	108	112	74-116	4	0-9	
o-Xylene	105	109	72-114	3	0-9	
Methyl-t-Butyl Ether (MTBE)	107	108	41-137	1	0-13	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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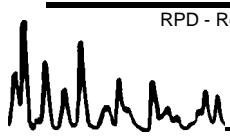
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Work Order No: 05-08-0772
Preparation: EPA 5030B
Method: EPA 8021B

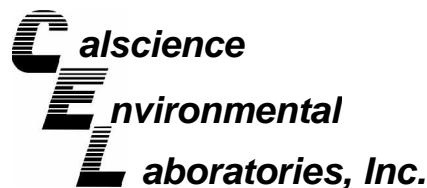
Project: Camp Pendleton UST 21478

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
098-01-003-3,666	Aqueous	GC 8	08/18/05	08/18/05	050818B01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	106	107	70-118	0	0-9	
Toluene	101	101	66-114	0	0-9	
Ethylbenzene	110	109	72-114	1	0-9	
p/m-Xylene	109	108	74-116	1	0-9	
o-Xylene	106	105	72-114	1	0-9	
Methyl-t-Butyl Ether (MTBE)	109	109	41-137	0	0-13	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Anteon Corp.
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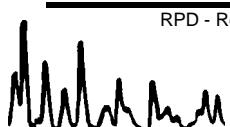
Date Received: N/A
Work Order No: 05-08-0772
Preparation: EPA 3510C
Method: DHS LUFT

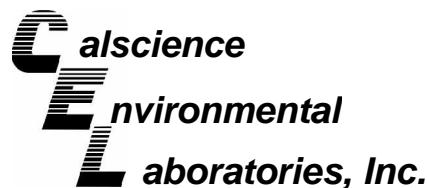
Project: Camp Pendleton UST 21478

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
098-03-039-816	Aqueous	GC 2	08/12/05	08/13/05	050812B24

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Diesel	107	114	60-132	6	0-11	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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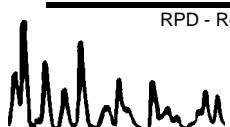
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Work Order No: 05-08-0772
Preparation: EPA 3510B
Method: EPA 8310

Project: Camp Pendleton UST 21478

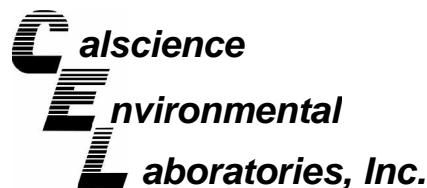
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-07-006-142	Aqueous	HPLC 5	08/15/05	08/16/05	050815L06

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzo (b) Fluoranthene	118	110	40-160	7	0-20	
Benzo (k) Fluoranthene	118	113	40-160	5	0-20	
Benzo (a) Pyrene	126	115	40-160	10	0-20	
Dibenz (a,h) Anthracene	124	116	40-160	6	0-20	
Benzo (g,h,i) Perylene	128	117	40-160	8	0-20	
Indeno (1,2,3-c,d) Pyrene	113	104	40-160	8	0-20	

RPD - Relative Percent Difference , CL - Control Limit



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Quality Control - LCS/LCS Duplicate



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

Date Received:

N/A

Work Order No:

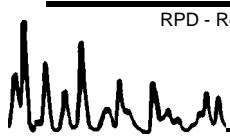
05-08-0772

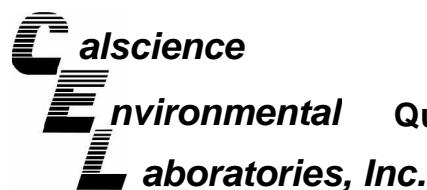
Project: Camp Pendleton UST 21478

Matrix: Aqueous

Parameter	Method	Quality Control Sample ID	Date Extracted	Date Analyzed	LCS % REC	LCSD % REC	%REC CL	RPD	RPD CL	Qual
Nitrite (as N)	EPA 300.0	099-05-118-2,921	N/A	08/11/05	96	94	73-115	2	0-26	
Nitrate (as N)	EPA 300.0	099-05-118-2,921	N/A	08/11/05	101	100	87-111	1	0-12	
Sulfate	EPA 300.0	099-05-118-2,921	N/A	08/11/05	101	100	89-107	1	0-13	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - Laboratory Control Sample



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

Date Received:

N/A

Work Order No:

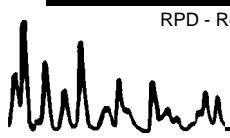
05-08-0772

Project: Camp Pendleton UST 21478

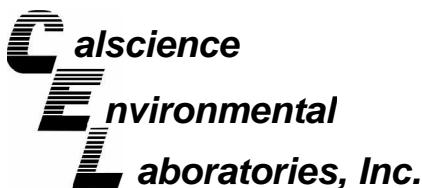
Matrix : Aqueous

Parameter	Method	Quality Control Sample ID	Date Analyzed	Date Extracted	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
Iron (II)	SM3500-FeD	099-05-111-2,030	08/10/05	N/A	1.0	1.1	106	80-120	

RPD - Relative Percent Difference , CL - Control Limit



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Glossary of Terms and Qualifiers



Work Order Number: 05-08-0772

<u>Qualifier</u>	<u>Definition</u>
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike or Matrix Spike Duplicate compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.



**CALSCIENCE ENVIRONMENTAL
LABORATORIES, INC.**

7440 LINCOLN WAY
GARDEN GROVE, CA 92841-1427
TEL: (714) 895-5494 • FAX: (714) 894-7501

CHAIN OF CUSTODY RECORD

8-1005

Date _____ / _____ of _____

Page _____ / _____ of _____

LABORATORY CLIENT: Anteon Corporation		CLIENT PROJECT NAME / NUMBER: Cam Pendleton UST 2478		P.O. NO.:																																												
ADDRESS: 3430 Camino Del Rio North	STATE: CA	PROJECT CONTACT: Karen Collins	SAMPLERS: (SIGNATURE) [Signature]	LAB USE ONLY <input checked="" type="checkbox"/> - <input type="checkbox"/> 772																																												
CITY San Diego	ZIP: 92108	E-MAIL: kimberly.t.cain@anteon.com	COELT LOG CODE: RSK 175	COOLER RECEIPT <input type="checkbox"/>																																												
TEL: (714) 571-4020	FAX: (619) 521-2093	TURNAROUND TIME: FAX 74	TEMP = °C	TEMP = °F - Fe+3 (3500)																																												
REQUESTED ANALYSES																																																
<input type="checkbox"/> SAME DAY <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 72 HR <input type="checkbox"/> 5 DAYS <input checked="" type="checkbox"/> 10 DAYS																																																
SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY) <input type="checkbox"/> RWQCB REPORTING FORMS <input type="checkbox"/> COELT EDF																																																
SPECIAL INSTRUCTIONS: See SOW RFA dated 7-28-05																																																
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3	21478-RW3	21478-RW3	1225		12																																											
4	21478-QCFB	21478-QCFB	1240		12																																											
5	21478-QCEB	21478-QCEB	1250		12																																											
6	21478-MW4	21478-MW4	1335	↓	12																																											
Received by: (Signature) CEZ Received by: (Signature) CEZ Received for laboratory by: (Signature) CEZ Relinquished by: (Signature) CEZ Relinquished by: (Signature) CEZ Relinquished by: (Signature) CEZ																																																
Date: 8/10/05 Time: 1535 Date: 8/10/05 Time: 1710																																																

DISTRIBUTION: When with final report, Green to file Yellow to Client.
Please note that pages 1 and 2 of 2 of our T/Cs are printed on the reverse side of the Green and Yellow copies respectively.

QA/QC Graphic 714-898-9702
10/20/04 Revision

**CALSCIENCE ENVIRONMENTAL
LABORATORIES, INC.**

GARDEN GROVE, CA 92841-1427
TEL: (714) 895-5494 • FAX: (714) 894-7501

g-11-205 4:08PM

FROM ANTEON

Page 30 of 33

Q&A Graphic 714-898-9702

CHAIN OF CUSTODY RECORD

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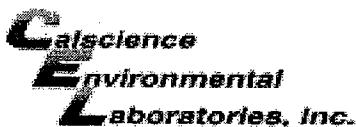
Date

of

Page

LABORATORY CLIENT: Anteon Corporation		P.O. NO.:																																													
ADDRESS: 3430 Camino Del Rio North																																															
CITY San Diego	STATE CA	PROJECT CONTACT: Karen Collins																																													
TEL 1-571-4020	FAX 1-521-2093	ZIP 92108																																													
TURNAROUND TIME:		<input type="checkbox"/> SAME DAY <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input checked="" type="checkbox"/> 72 HR <input type="checkbox"/> 5 DAYS <input checked="" type="checkbox"/> FAX <small>SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)</small>																																													
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REQUESTED ANALYSES																																															
<input type="checkbox"/> COELT LOG CODE <input type="checkbox"/> COOLER RECEIPT <input type="checkbox"/> TEMP =																																															
<input type="checkbox"/> ALKALINITY (310.1.) <input type="checkbox"/> SO₄ - NO₃ - NO₂ (300.2.) <input type="checkbox"/> METHANE (RSK 175) <input type="checkbox"/> TOTAL SULFIDE (376.2) <input type="checkbox"/> THIOL(10-3M) <input type="checkbox"/> PMA (9910) or TBL (U) <input type="checkbox"/> CAC, 22 METALS (6010B) <input type="checkbox"/> PCBS(6002) <input type="checkbox"/> PEST(5081A) <input type="checkbox"/> SVOCs (82200) <input type="checkbox"/> 5035 ENCLERPRE <input checked="" type="checkbox"/> KTC <input type="checkbox"/> TOLs (60200) <input type="checkbox"/> EXTGENTLES (62000) <input type="checkbox"/> BTEX / MTBE (62500) d. BSCA1B <input type="checkbox"/> TPH (D) or (B015M) <input type="checkbox"/> 8/11/05																																															
<table border="1"> <thead> <tr> <th rowspan="2">SAMPLE ID</th> <th rowspan="2">FIELD POINT NAME (FOR COELT EDF)</th> <th colspan="2">SAMPLING</th> <th rowspan="2">MATRIX</th> <th rowspan="2">NO. OF CONT.</th> </tr> <tr> <th>DATE</th> <th>TIME</th> </tr> </thead> <tbody> <tr> <td>21478-QCTB</td> <td>21478-QCTB</td> <td>0840</td> <td>W</td> <td>36</td> <td></td> </tr> <tr> <td>21478-MW2</td> <td>21478-MW2</td> <td>1020</td> <td></td> <td>12</td> <td></td> </tr> <tr> <td>21478-RW3</td> <td>21478-RW3</td> <td>1225</td> <td></td> <td>12</td> <td></td> </tr> <tr> <td>21478-QCFB</td> <td>21478-QCFB</td> <td>1240</td> <td></td> <td>12</td> <td></td> </tr> <tr> <td>21478-QCEB</td> <td>21478-QCEB</td> <td>1250</td> <td></td> <td>12</td> <td></td> </tr> <tr> <td>21478-MW4</td> <td>21478-MW4</td> <td>1235</td> <td>V</td> <td>12</td> <td></td> </tr> </tbody> </table>				SAMPLE ID	FIELD POINT NAME (FOR COELT EDF)	SAMPLING		MATRIX	NO. OF CONT.	DATE	TIME	21478-QCTB	21478-QCTB	0840	W	36		21478-MW2	21478-MW2	1020		12		21478-RW3	21478-RW3	1225		12		21478-QCFB	21478-QCFB	1240		12		21478-QCEB	21478-QCEB	1250		12		21478-MW4	21478-MW4	1235	V	12	
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Relinquished by: (Signature)		Received by: (Signature)																																													
Relinquished by: (Signature)		Received for Laboratory by: (Signature)																																													
Date: 8/10/05		Date: 8/10/05																																													
Time: 10:35		Time: 10:35																																													

DISTRIBUTION: When with final report, Green to file, Yellow to Client.



WORK ORDER #:

05 - 08 - 0772

Cooler 1 of 3

SAMPLE RECEIPT FORMCLIENT: AnteonDATE: 8/10/15**TEMPERATURE – SAMPLES RECEIVED BY:****CALSCIENCE COURIER:**

- Chilled, cooler with temperature blank provided.
 Chilled, cooler without temperature blank.
 Chilled and placed in cooler with wet ice.
 Ambient and placed in cooler with wet ice.
 Ambient temperature.

32.2 °C Temperature blank.**LABORATORY (Other than Calscience Courier):**

- °C Temperature blank.
 °C IR thermometer.
 Ambient temperature.

Initial:

CUSTODY SEAL INTACT:

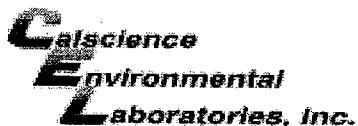
Sample(s): _____ Cooler: No (Not Intact) : _____ Not Applicable (N/A):
 Initial:

SAMPLE CONDITION:

- | | Yes | No | N/A |
|---|-------------------------------------|-------|-------|
| Chain-Of-Custody document(s) received with samples..... | <input checked="" type="checkbox"/> | | |
| Sample container label(s) consistent with custody papers..... | <input checked="" type="checkbox"/> | | |
| Sample container(s) intact and good condition..... | <input checked="" type="checkbox"/> | | |
| Correct containers for analyses requested..... | <input checked="" type="checkbox"/> | | |
| Proper preservation noted on sample label(s)..... | <input checked="" type="checkbox"/> | | |
| VOA vial(s) free of headspace..... | <input checked="" type="checkbox"/> | | |
| Tedlar bag(s) free of condensation..... | <input checked="" type="checkbox"/> | | |

Initial:

COMMENTS:



WORK ORDER #:

05 - 08 - 0772

Cooler 2 of 3**SAMPLE RECEIPT FORM**CLIENT: OntcorDATE: 8/10/15**TEMPERATURE – SAMPLES RECEIVED BY:****CALSCIENCE COURIER:**

- Chilled, cooler with temperature blank provided.
 Chilled, cooler without temperature blank.
 Chilled and placed in cooler with wet ice.
 Ambient and placed in cooler with wet ice.
 Ambient temperature.

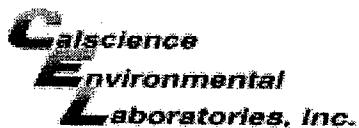
Z. n °C Temperature blank.**LABORATORY (Other than Calscience Courier):**

- °C Temperature blank.
 °C IR thermometer.
 Ambient temperature.

Initial: [Signature]**CUSTODY SEAL INTACT:**Sample(s): _____ Cooler: No (Not Intact) : _____ Not Applicable (N/A): _____Initial: [Signature]**SAMPLE CONDITION:**

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples.....	<input checked="" type="checkbox"/>
Sample container label(s) consistent with custody papers.....	<input checked="" type="checkbox"/>
Sample container(s) intact and good condition.....	<input checked="" type="checkbox"/>
Correct containers for analyses requested.....	<input checked="" type="checkbox"/>
Proper preservation noted on sample label(s).....	<input checked="" type="checkbox"/>
VOA vial(s) free of headspace.....	<input checked="" type="checkbox"/>
Tedlar bag(s) free of condensation.....	<input checked="" type="checkbox"/>

Initial: [Signature]**COMMENTS:**



WORK ORDER #:

05 - 08 - 0772

Cooler 3 of 3

SAMPLE RECEIPT FORMCLIENT: AntconDATE: 8/10/15**TEMPERATURE – SAMPLES RECEIVED BY:****CALSCIENCE COURIER:**

- Chilled, cooler with temperature blank provided.
 Chilled, cooler without temperature blank.
 Chilled and placed in cooler with wet ice.
 Ambient and placed in cooler with wet ice.
 Ambient temperature.

3, 2°C Temperature blank.**LABORATORY (Other than Calscience Courier):**

- °C Temperature blank.
 °C IR thermometer.
 Ambient temperature.

Initial:

CUSTODY SEAL INTACT:

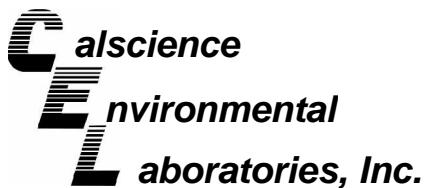
Sample(s): _____ Cooler: No (Not Intact) : _____ Not Applicable (N/A):
 Initial:

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples.....	<input checked="" type="checkbox"/>
Sample container label(s) consistent with custody papers.....	<input checked="" type="checkbox"/>
Sample container(s) intact and good condition.....	<input checked="" type="checkbox"/>
Correct containers for analyses requested.....	<input checked="" type="checkbox"/>
Proper preservation noted on sample label(s).....	<input checked="" type="checkbox"/>
VOA vial(s) free of headspace.....	<input checked="" type="checkbox"/>
Tedlar bag(s) free of condensation.....	<input checked="" type="checkbox"/>

Initial:

COMMENTS:



August 18, 2005

Hamide Kayaci
Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

Subject: **Calscience Work Order No.: 05-08-0867**
Client Reference: Camp Pendleton UST 21478

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 8/11/2005 and analyzed in accordance with the attached chain-of-custody.

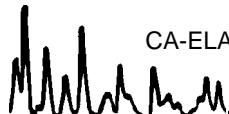
Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

A handwritten signature in black ink that reads "Marycarol Valenzuela".

Calscience Environmental
Laboratories, Inc.
Marycarol Valenzuela
Project Manager



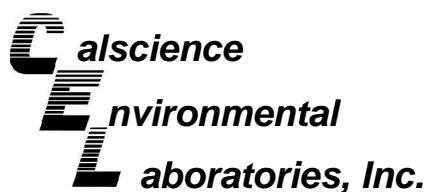
CA-ELAP ID: 1230

NELAP ID: 03220CA

CSDLAC ID: 10109

SCAQMD ID: 93LA0830

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Analytical Report



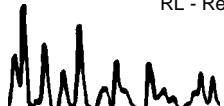
Anteon Corp. Date Received: 08/11/05
 3430 Camino Del Rio North Work Order No: 05-08-0867
 San Diego, CA 92108-1701 Preparation: N/A
 Method: RSK-175M
 Units: ug/L

Project: Camp Pendleton UST 21478

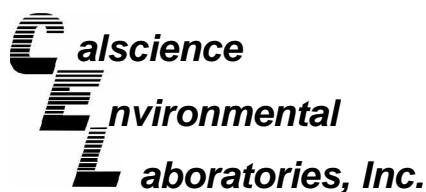
Page 1 of 1

Client Sample Number	Lab Sample Number		Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID		
21478-MW3	05-08-0867-2		08/11/05	Aqueous	N/A	08/13/05	050813L02		
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>
Methane	ND	1.00	1		Ethylene	ND	1.00	1	
Ethane	ND	1.00	1						
21478-OW1	05-08-0867-3		08/11/05	Aqueous	N/A	08/13/05	050813L02		
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>
Methane	7340	200	200		Ethylene	ND	1.00	1	
Ethane	ND	1.00	1						
Method Blank	099-12-010-1,066		N/A	Aqueous	N/A	08/13/05	050813L02		
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>
Methane	ND	1.00	1		Ethylene	ND	1.00	1	
Ethane	ND	1.00	1						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



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Analytical Report



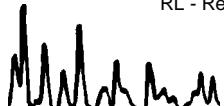
Anteon Corp. Date Received: 08/11/05
 3430 Camino Del Rio North Work Order No: 05-08-0867
 San Diego, CA 92108-1701 Preparation: EPA 3010A Total
 Method: EPA 6010B
 Units: mg/L

Project: Camp Pendleton UST 21478

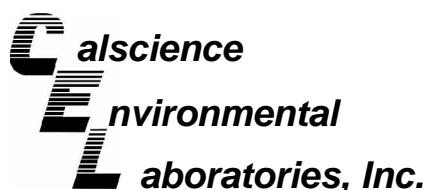
Page 1 of 1

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID			
21478-MW3	05-08-0867-2	08/11/05	Aqueous	08/15/05	08/16/05	050815L05			
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>
Iron	0.232	0.1	1		Manganese	ND	0.00500	1	
21478-OW1	05-08-0867-3	08/11/05	Aqueous	08/15/05	08/16/05	050815L05			
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>
Iron	18.3	0.1	1		Manganese	10.4	0.00500	1	
Method Blank	097-01-003-5,239	N/A	Aqueous	08/15/05	08/16/05	050815L05			
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>
Iron	ND	0.100	1		Manganese	ND	0.00500	1	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



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Analytical Report



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

Date Received: 08/11/05
Work Order No: 05-08-0867
Preparation: EPA 5030B
Method: EPA 8021B
Units: ug/L

Project: Camp Pendleton UST 21478

Page 1 of 1

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
21478-QCTB	05-08-0867-1	08/11/05	Aqueous	08/16/05	08/17/05	050816B01

Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Benzene	ND	0.30	0.14	1		Xylenes (total)	ND	0.30	0.24	1	
Toluene	ND	0.30	0.17	1		Methyl-t-Butyl Ether (MTBE)	ND	5.0	0.64	1	
Ethylbenzene	ND	0.30	0.17	1							
Surrogates:	REC (%)	Control Limits			Qual						
1,4-Bromofluorobenzene	99	80-116									

21478-MW3	05-08-0867-2	08/11/05	Aqueous	08/16/05	08/17/05	050816B01
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Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

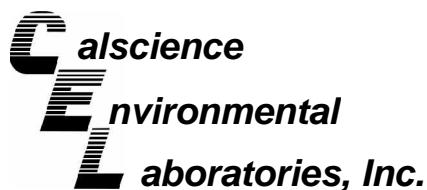
Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Benzene	ND	0.30	0.14	1		Xylenes (total)	ND	0.30	0.24	1	
Toluene	ND	0.30	0.17	1		Methyl-t-Butyl Ether (MTBE)	ND	5.0	0.64	1	
Ethylbenzene	ND	0.30	0.17	1							
Surrogates:	REC (%)	Control Limits			Qual						
1,4-Bromofluorobenzene	99	80-116									

Method Blank	098-01-003-3,663	N/A	Aqueous	08/16/05	08/16/05	050816B01
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Comment(s): -Results were evaluated to the MDL, concentrations >= to the MDL but < RL, if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Benzene	ND	0.30	0.14	1		Xylenes (total)	ND	0.30	0.24	1	
Toluene	ND	0.30	0.17	1		Methyl-t-Butyl Ether (MTBE)	ND	5.0	0.64	1	
Ethylbenzene	ND	0.30	0.17	1							
Surrogates:	REC (%)	Control Limits			Qual						
1,4-Bromofluorobenzene	100	80-116									

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Anteon Corp. Date Received: 08/11/05
 3430 Camino Del Rio North Work Order No: 05-08-0867
 San Diego, CA 92108-1701 Preparation: EPA 3510C
 Method: DHS LUFT

Project: Camp Pendleton UST 21478

Page 1 of 1

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
21478-MW3	05-08-0867-2	08/11/05	Aqueous	08/12/05	08/13/05	050812B06

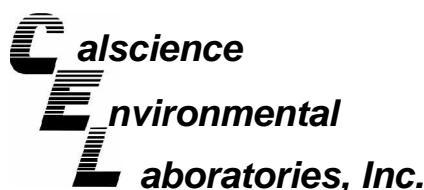
Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	500	1		ug/L
<u>Surrogates:</u>					
Decachlorobiphenyl	112	51-141			

Method Blank	098-03-039-812	N/A	Aqueous	08/12/05	08/13/05	050812B06
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	500	1		ug/L
<u>Surrogates:</u>					
Decachlorobiphenyl	118	51-141			

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

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Analytical Report



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

Date Received: 08/11/05
Work Order No: 05-08-0867
Preparation: EPA 3510B
Method: EPA 8310
Units: ug/L

Project: Camp Pendleton UST 21478

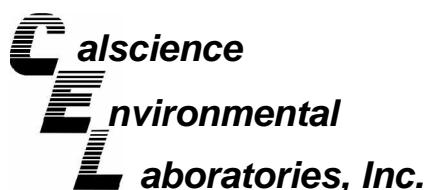
Page 1 of 1

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
21478-MW3	05-08-0867-2	08/11/05	Aqueous	08/15/05	08/16/05	050815L06

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Naphthalene	ND	1.0	1		Benzo (a) Anthracene	ND	1.0	1	
Acenaphthylene	ND	1.0	1		Chrysene	ND	1.0	1	
Acenaphthene	ND	1.0	1		Benzo (b) Fluoranthene	ND	1.0	1	
Fluorene	ND	1.0	1		Benzo (k) Fluoranthene	ND	1.0	1	
Phenanthrene	ND	1.0	1		Benzo (a) Pyrene	ND	0.20	1	
Anthracene	ND	1.0	1		Dibenz (a,h) Anthracene	ND	1.0	1	
Fluoranthene	ND	1.0	1		Benzo (g,h,i) Perylene	ND	1.0	1	
Pyrene	ND	1.0	1		Indeno (1,2,3-c,d) Pyrene	ND	1.0	1	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control</u>		<u>Qual</u>					
Decafluorobiphenyl	59	40-160							

Method Blank	099-07-006-142	N/A	Aqueous	08/15/05	08/16/05	050815L06			
Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Naphthalene	ND	1.0	1		Benzo (a) Anthracene	ND	1.0	1	
Acenaphthylene	ND	1.0	1		Chrysene	ND	1.0	1	
Acenaphthene	ND	1.0	1		Benzo (b) Fluoranthene	ND	1.0	1	
Fluorene	ND	1.0	1		Benzo (k) Fluoranthene	ND	1.0	1	
Phenanthrene	ND	1.0	1		Benzo (a) Pyrene	ND	0.20	1	
Anthracene	ND	1.0	1		Dibenz (a,h) Anthracene	ND	1.0	1	
Fluoranthene	ND	1.0	1		Benzo (g,h,i) Perylene	ND	1.0	1	
Pyrene	ND	1.0	1		Indeno (1,2,3-c,d) Pyrene	ND	1.0	1	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control</u>		<u>Qual</u>					
Decafluorobiphenyl	94	40-160							

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

Date Received: 08/11/05
Work Order No: 05-08-0867

Project: Camp Pendleton UST 21478

Page 1 of 1

Client Sample Number	Lab Sample Number	Date Collected	Matrix
21478-MW3	05-08-0867-2	08/11/05	Aqueous

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Nitrite (as N)	ND	0.10	1		mg/L	N/A	08/12/05	EPA 300.0
Nitrate (as N)	2.9	0.1	1		mg/L	N/A	08/12/05	EPA 300.0
Sulfate	99	10	10		mg/L	N/A	08/12/05	EPA 300.0
Sulfide, Total	ND	0.050	1		mg/L	N/A	08/15/05	EPA 376.2
Alkalinity, Total (as CaCO ₃)	180	5.0	1		mg/L	N/A	08/15/05	SM 2320B
Iron (II)	ND	0.10	1		mg/L	N/A	08/11/05	SM3500-FeD

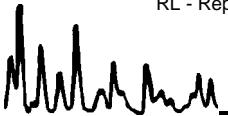
21478-OW1	05-08-0867-3	08/11/05	Aqueous
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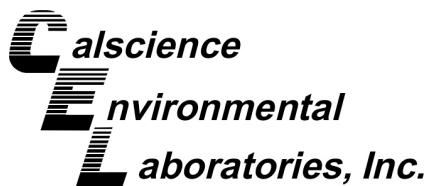
Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Nitrite (as N)	ND	0.10	1		mg/L	N/A	08/12/05	EPA 300.0
Nitrate (as N)	ND	0.10	1		mg/L	N/A	08/12/05	EPA 300.0
Sulfate	54	50	50		mg/L	N/A	08/12/05	EPA 300.0
Sulfide, Total	1.3	0.050	1		mg/L	N/A	08/15/05	EPA 376.2
Alkalinity, Total (as CaCO ₃)	580	5.0	1		mg/L	N/A	08/15/05	SM 2320B
Iron (II)	14	0.20	2		mg/L	N/A	08/11/05	SM3500-FeD

Method Blank	N/A	Aqueous
--------------	-----	---------

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Nitrite (as N)	ND	0.10	1		mg/L	N/A	08/12/05	EPA 300.0
Nitrate (as N)	ND	0.10	1		mg/L	N/A	08/12/05	EPA 300.0
Sulfate	ND	1.0	1		mg/L	N/A	08/12/05	EPA 300.0
Sulfide, Total	ND	0.050	1		mg/L	N/A	08/15/05	EPA 376.2
Iron (II)	ND	0.10	1		mg/L	N/A	08/11/05	SM3500-FeD

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers





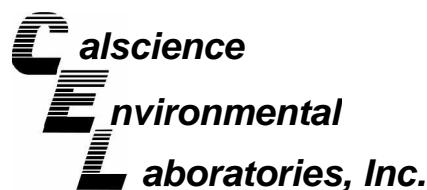
ANALYTICAL REPORT

ANTEON 3430 Camino Del Rio North San Diego, CA 92108-1701	Date Sampled: 08/11/05 Date Received: 08/11/05 Date Digested: 08/15/05 Date Analyzed: 08/16/05 Work Order No.: 05-08-0867 Method: Calculation Page 1 of 1
Attn: Hamide Kayaci RE: Camp Pendleton UST 21478	

All concentrations are reported in mg/L (ppm).

<u>Sample Number</u>	<u>Ferric Iron Concentration</u>	<u>Reporting Limit</u>
21478-MW3	0.232	0.100
21478-OW1	4.3	0.100





Quality Control - Spike/Spike Duplicate



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

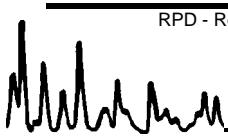
Date Received: 08/11/05
Work Order No: 05-08-0867
Preparation: EPA 3010A Total
Method: EPA 200.7

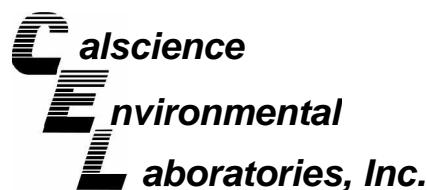
Project Camp Pendleton UST 21478

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
05-08-0902-1	Aqueous	ICP 3300	08/15/05	08/16/05	050815S05

Parameter	<u>MS %REC</u>	<u>MSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Iron	70	84	80-120	9	0-20	3
Manganese	100	96	80-120	4	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - Spike/Spike Duplicate



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

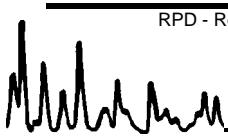
Date Received: 08/11/05
Work Order No: 05-08-0867
Preparation: EPA 5030B
Method: EPA 8021B

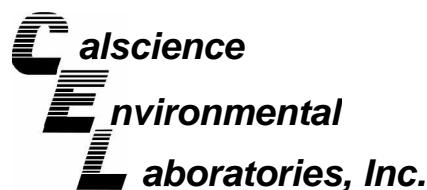
Project Camp Pendleton UST 21478

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
05-08-0772-2	Aqueous	GC 8	08/16/05	08/17/05	050816S01

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	113	112	73-109	1	0-9	3
Toluene	107	106	74-104	2	0-11	3
Ethylbenzene	115	113	77-107	2	0-11	3
p/m-Xylene	111	106	74-110	5	0-12	3
o-Xylene	111	108	75-105	3	0-14	3
Methyl-t-Butyl Ether (MTBE)	131	132	74-128	1	0-13	3

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - Spike/Spike Duplicate



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

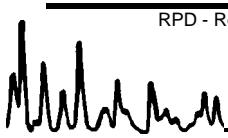
Date Received: 08/11/05
Work Order No: 05-08-0867
Preparation: EPA 3510B
Method: EPA 8310

Project Camp Pendleton UST 21478

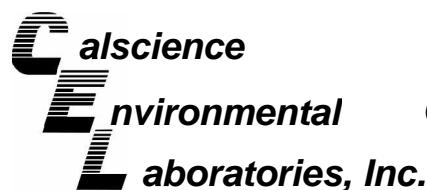
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
05-08-0772-2	Aqueous	HPLC 5	08/15/05	08/16/05	050815S06

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzo (b) Fluoranthene	109	107	40-160	2	0-20	
Benzo (k) Fluoranthene	113	111	40-160	1	0-20	
Benzo (a) Pyrene	116	116	40-160	1	0-20	
Dibenz (a,h) Anthracene	112	112	40-160	1	0-20	
Benzo (g,h,i) Perylene	112	111	40-160	1	0-20	
Indeno (1,2,3-c,d) Pyrene	103	101	40-160	1	0-20	

RPD - Relative Percent Difference , CL - Control Limit



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Quality Control - Spike/Spike Duplicate



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

Date Received: N/A
Work Order No: 05-08-0867

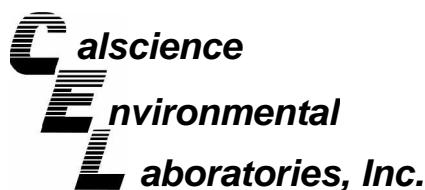
Project: Camp Pendleton UST 21478

Matrix: Aqueous

Parameter	Method	Quality Control Sample ID	Date Analyzed	Date Extracted	MS% REC	MSD % REC	%REC CL	RPD	RPD CL	Qualifiers
Nitrite (as N)	EPA 300.0	21478-MW3	08/12/05	N/A	97	97	68-122	0	0-8	
Nitrate (as N)	EPA 300.0	21478-MW3	08/12/05	N/A	101	101	58-142	0	0-6	
Sulfate	EPA 300.0	21478-MW3	08/12/05	N/A	103	104	49-133	0	0-3	
Iron (II)	SM3500-FeD	05-08-0869-4	08/11/05	N/A	103	105	70-130	2	0-25	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - Duplicate



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

Date Received: N/A
Work Order No: 05-08-0867

Project: Camp Pendleton UST 21478

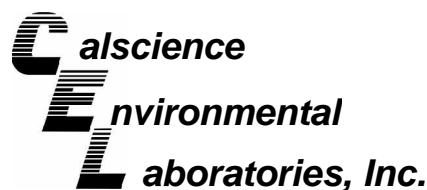
Matrix: Aqueous

Parameter	Method	QC Sample ID	Date Analyzed	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Alkalinity, Total (as CaCO ₃)	SM 2320B	05-08-0895-5	08/15/05	290	290	0	0-25	
Bicarbonate (as CaCO ₃)	SM 2320B	05-08-0895-5	08/15/05	290	290	0	0-25	
Carbonate (as CaCO ₃)	SM 2320B	05-08-0895-5	08/15/05	ND	ND	NA	0-25	
Hydroxide (as CaCO ₃)	SM 2320B	05-08-0895-5	08/15/05	ND	ND	NA	0-25	
Sulfide, Total	EPA 376.2	05-08-0794-7	08/15/05	400	400	0	0-25	

RPD - Relative Percent Difference , CL - Control Limit



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Quality Control - LCS/LCS Duplicate



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

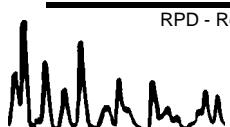
Date Received: N/A
Work Order No: 05-08-0867
Preparation: N/A
Method: RSK-175M

Project: Camp Pendleton UST 21478

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-1,066	Aqueous	GC 33	N/A	08/13/05	050813L02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	94	94	79-109	0	0-20	
Ethane	95	95	80-120	0	0-20	

RPD - Relative Percent Difference , CL - Control Limit




**Environmental Quality Control - Laboratory Control Sample
Laboratories, Inc.**

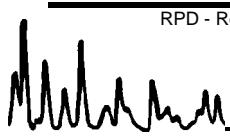

Anteon Corp. 3430 Camino Del Rio North San Diego, CA 92108-1701	Date Received:	N/A
	Work Order No:	05-08-0867
	Preparation:	EPA 3010A Total
	Method:	EPA 6010B

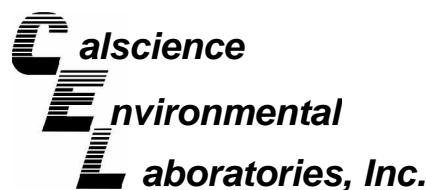
Project: Camp Pendleton UST 21478

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
097-01-003-5,239	Aqueous	ICP 3300	08/16/05	050815-I-05	050815L05

<u>Parameter</u>	<u>Conc Added</u>	<u>Conc Recovered</u>	<u>LCS %Rec</u>	<u>%Rec CL</u>	<u>Qualifiers</u>
Iron	0.500	0.465	93	80-120	
Manganese	0.500	0.496	99	80-120	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

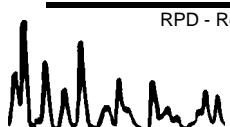
Date Received: N/A
Work Order No: 05-08-0867
Preparation: EPA 5030B
Method: EPA 8021B

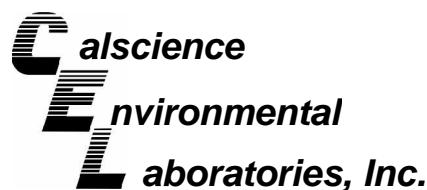
Project: Camp Pendleton UST 21478

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
098-01-003-3,663	Aqueous	GC 8	08/16/05	08/16/05	050816B01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	108	111	70-118	3	0-9	
Toluene	102	105	66-114	4	0-9	
Ethylbenzene	109	113	72-114	4	0-9	
p/m-Xylene	108	112	74-116	4	0-9	
o-Xylene	105	109	72-114	3	0-9	
Methyl-t-Butyl Ether (MTBE)	107	108	41-137	1	0-13	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

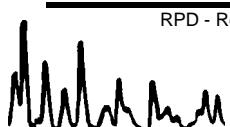
Date Received: N/A
Work Order No: 05-08-0867
Preparation: EPA 3510C
Method: DHS LUFT

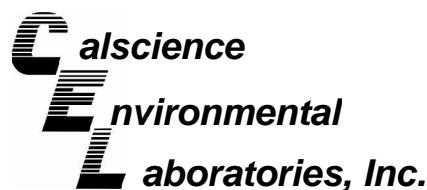
Project: Camp Pendleton UST 21478

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
098-03-039-812	Aqueous	GC 23	08/12/05	08/13/05	050812B06

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Diesel	96	98	60-132	3	0-11	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

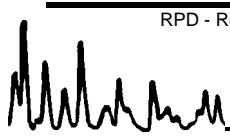
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Work Order No: 05-08-0867
Preparation: EPA 3510B
Method: EPA 8310

Project: Camp Pendleton UST 21478

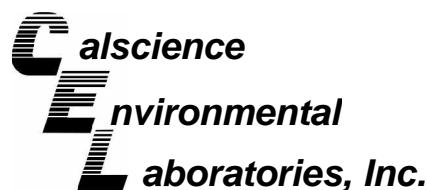
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-07-006-142	Aqueous	HPLC 5	08/15/05	08/16/05	050815L06

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzo (b) Fluoranthene	118	110	40-160	7	0-20	
Benzo (k) Fluoranthene	118	113	40-160	5	0-20	
Benzo (a) Pyrene	126	115	40-160	10	0-20	
Dibenz (a,h) Anthracene	124	116	40-160	6	0-20	
Benzo (g,h,i) Perylene	128	117	40-160	8	0-20	
Indeno (1,2,3-c,d) Pyrene	113	104	40-160	8	0-20	

RPD - Relative Percent Difference , CL - Control Limit



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Quality Control - LCS/LCS Duplicate



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

Date Received:

N/A

Work Order No:

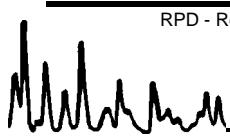
05-08-0867

Project: Camp Pendleton UST 21478

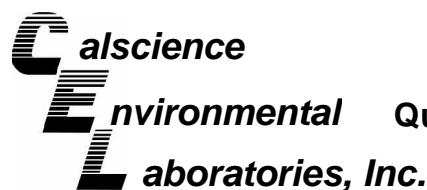
Matrix: Aqueous

Parameter	Method	Quality Control Sample ID	Date Extracted	Date Analyzed	LCS % REC	LCSD % REC	%REC CL	RPD	RPD CL	Qual
Nitrite (as N)	EPA 300.0	099-05-118-2,920	N/A	08/12/05	97	97	73-115	1	0-26	
Nitrate (as N)	EPA 300.0	099-05-118-2,920	N/A	08/12/05	103	102	87-111	1	0-12	
Sulfate	EPA 300.0	099-05-118-2,920	N/A	08/12/05	106	105	89-107	2	0-13	

RPD - Relative Percent Difference , CL - Control Limit



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Quality Control - Laboratory Control Sample



Anteon Corp.
3430 Camino Del Rio North
San Diego, CA 92108-1701

Date Received:

N/A

Work Order No:

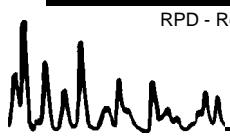
05-08-0867

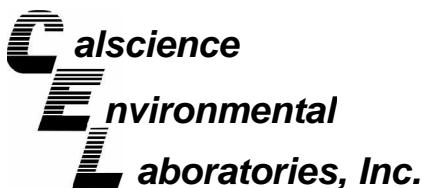
Project: Camp Pendleton UST 21478

Matrix : Aqueous

Parameter	Method	Quality Control Sample ID	Date Analyzed	Date Extracted	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
Iron (II)	SM3500-FeD	099-05-111-2,031	08/11/05	N/A	1.0	1.1	105	80-120	

RPD - Relative Percent Difference , CL - Control Limit



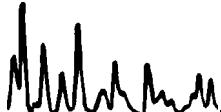


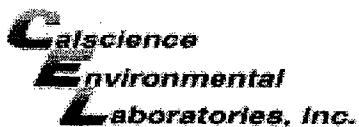
Glossary of Terms and Qualifiers



Work Order Number: 05-08-0867

<u>Qualifier</u>	<u>Definition</u>
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike or Matrix Spike Duplicate compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.





WORK ORDER #:

05 - 08 - 0867

Cooler 1 of 1

SAMPLE RECEIPT FORMCLIENT: AnteonDATE: 8/11/15**TEMPERATURE – SAMPLES RECEIVED BY:****CALSCIENCE COURIER:**

- Chilled, cooler with temperature blank provided.
 Chilled, cooler without temperature blank.
 Chilled and placed in cooler with wet ice.
 Ambient and placed in cooler with wet ice.
 Ambient temperature.

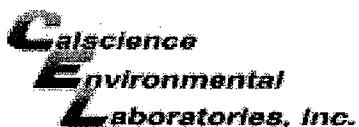
29 °C Temperature blank.**LABORATORY (Other than Calscience Courier):**

- °C Temperature blank.
 °C IR thermometer.
 Ambient temperature.

Initial: BB**CUSTODY SEAL INTACT:**Sample(s): _____ Cooler: No (Not Intact) : _____ Not Applicable (N/A): AA BBInitial: BB**SAMPLE CONDITION:**

- | | Yes | No | N/A |
|---|-------------------------------------|-------|-------|
| Chain-Of-Custody document(s) received with samples..... | <input checked="" type="checkbox"/> | | |
| Sample container label(s) consistent with custody papers..... | <input checked="" type="checkbox"/> | | |
| Sample container(s) intact and good condition..... | <input checked="" type="checkbox"/> | | |
| Correct containers for analyses requested..... | <input checked="" type="checkbox"/> | | |
| Proper preservation noted on sample label(s)..... | <input checked="" type="checkbox"/> | | |
| VOA vial(s) free of headspace..... | <input checked="" type="checkbox"/> | | |
| Tedlar bag(s) free of condensation..... | <input checked="" type="checkbox"/> | | |

Initial: BB**COMMENTS:**



WORK ORDER #: 05 - 08 - 0867

Cooler 2 of 2**SAMPLE RECEIPT FORM**CLIENT: ArtionDATE: 8/10/15**TEMPERATURE – SAMPLES RECEIVED BY:****CALSCIENCE COURIER:**

- Chilled, cooler with temperature blank provided.
 Chilled, cooler without temperature blank.
 Chilled and placed in cooler with wet ice.
 Ambient and placed in cooler with wet ice.
 Ambient temperature.

2.9 °C Temperature blank.**LABORATORY (Other than Calscience Courier):**

- °C Temperature blank.
 °C IR thermometer.
 Ambient temperature.

Initial:

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: No (Not Intact) : _____ Not Applicable (N/A):
 Initial:

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples.....	<input checked="" type="checkbox"/>
Sample container label(s) consistent with custody papers.....	<input checked="" type="checkbox"/>
Sample container(s) intact and good condition.....	<input checked="" type="checkbox"/>
Correct containers for analyses requested.....	<input checked="" type="checkbox"/>
Proper preservation noted on sample label(s).....	<input checked="" type="checkbox"/>
VOA vial(s) free of headspace.....	<input checked="" type="checkbox"/>
Tedlar bag(s) free of condensation.....	<input checked="" type="checkbox"/>

Initial:

COMMENTS:

APPENDIX C
GEOTRACKER SUBMITTAL CONFIRMATION REPORTS

Electronic Submittal Information

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Confirmation Number: 5956612825

Date/Time of Submittal: 12/28/2005 9:39:33 AM

Facility Global ID: T0607301679

Facility Name: AREA 21

Submittal Title: Semiannual Groundwater Monitoring Report, UST Site 21478 MCB
Camp Pendleton, California, December 2005

Submittal Type: GW Monitoring Report

Click [here](#) to view the detections report for this upload.

AREA 21
BLDG 21478 MCB
CAMP PENDLETON, CA 92055

Regional Board (lead agency) - Case #: **9UT2914**
SAN DIEGO RWQCB (REGION 9) - **(BG)**
Local Agency - Case #: **H05939-166**
SAN DIEGO COUNTY LOP - **(ELS)**

CONF #	TITLE	QUARTER
5956612825	Semiannual Groundwater Monitoring Report, UST Site 21478 MCB Camp Pendleton, California, December 2005	Q3 2005
SUBMITTED BY	SUBMIT DATE	STATUS
Aaron J. Heidt	12/28/2005	PENDING REVIEW

SAMPLE DETECTIONS REPORT

# FIELD POINTS SAMPLED	6
# FIELD POINTS WITH DETECTIONS	5
# FIELD POINTS WITH WATER SAMPLE DETECTIONS ABOVE MCL	3
SAMPLE MATRIX TYPES	WATER

METHOD QA/QC REPORT

METHODS USED

A2320B,CATPH-D,E300.0,E376.2,LPFE3,RSK175,
SW6010B,SW8021B,SW8310

TESTED FOR REQUIRED ANALYTES?

MISSING PARAMETERS NOT TESTED:

- CATPH-D REQUIRES TPHC28C40 TO BE TESTED
- CATPH-D REQUIRES TPHC10C28 TO BE TESTED
- SW8021B REQUIRES ETBE TO BE TESTED
- SW8021B REQUIRES TAME TO BE TESTED
- SW8021B REQUIRES DIPE TO BE TESTED
- SW8021B REQUIRES TBA TO BE TESTED
- SW8021B REQUIRES DCA12 TO BE TESTED
- SW8021B REQUIRES EDB TO BE TESTED

LAB NOTE DATA QUALIFIERS

Y

QA/QC FOR 8021/8260 SERIES SAMPLES

TECHNICAL HOLDING TIME VIOLATIONS 0

METHOD HOLDING TIME VIOLATIONS 0

LAB BLANK DETECTIONS ABOVE REPORTING DETECTION LIMIT 0

LAB BLANK DETECTIONS 0

DO ALL BATCHES WITH THE 8021/8260 SERIES INCLUDE THE FOLLOWING?

- LAB METHOD BLANK Y
- MATRIX SPIKE Y
- MATRIX SPIKE DUPLICATE Y
- BLANK SPIKE Y
- SURROGATE SPIKE Y

WATER SAMPLES FOR 8021/8260 SERIES

MATRIX SPIKE / MATRIX SPIKE DUPLICATE(S) % RECOVERY BETWEEN 65-135% Y

MATRIX SPIKE / MATRIX SPIKE DUPLICATE(S) RPD LESS THAN 30% Y

SURROGATE SPIKES % RECOVERY BETWEEN 85-115% Y

BLANK SPIKE / BLANK SPIKE DUPLICATES % RECOVERY BETWEEN 70-130% Y

SOIL SAMPLES FOR 8021/8260 SERIES

MATRIX SPIKE / MATRIX SPIKE DUPLICATE(S) % RECOVERY BETWEEN 65-135% n/a

MATRIX SPIKE / MATRIX SPIKE DUPLICATE(S) RPD LESS THAN 30% n/a

SURROGATE SPIKES % RECOVERY BETWEEN 70-125% n/a

BLANK SPIKE / BLANK SPIKE DUPLICATES % RECOVERY BETWEEN 70-130% n/a

FIELD QC SAMPLES

SAMPLE	COLLECTED	DETECTIONS > REPDL
QCTB SAMPLES	N	0
QCEB SAMPLES	N	0
QCAB SAMPLES	N	0

Electronic Submittal Information

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Confirmation Number: 7710985124

Date/Time of Submittal: 12/28/2005 9:42:59 AM

Facility Global ID: T0607301679

Facility Name: AREA 21

Submittal Title: Semiannual Groundwater Monitoring Report, UST Site 21478 MCB
Camp Pendleton, California, December 2005

Submittal Type: GW Monitoring Report

Click [here](#) to view the detections report for this upload.

AREA 21
BLDG 21478 MCB
CAMP PENDLETON, CA 92055

Regional Board (lead agency) - Case #: **9UT2914**
SAN DIEGO RWQCB (REGION 9) - **(BG)**
Local Agency - Case #: **H05939-166**
SAN DIEGO COUNTY LOP - **(ELS)**

CONF #	TITLE	QUARTER
7710985124	Semiannual Groundwater Monitoring Report, UST Site 21478 MCB Camp Pendleton, California, December 2005	Q3 2005
SUBMITTED BY	SUBMIT DATE	STATUS
Aaron J. Heidt	12/28/2005	PENDING REVIEW

SAMPLE DETECTIONS REPORT

# FIELD POINTS SAMPLED	3
# FIELD POINTS WITH DETECTIONS	2
# FIELD POINTS WITH WATER SAMPLE DETECTIONS ABOVE MCL	2
SAMPLE MATRIX TYPES	WATER

METHOD QA/QC REPORT

METHODS USED

A2320B,CATPH-D,E200.7,E300.0,E376.2,LPFE3,
RSK175,SW6010B,SW8021B,SW8310

N

TESTED FOR REQUIRED ANALYTES?

MISSING PARAMETERS NOT TESTED:

- CATPH-D REQUIRES TPHC28C40 TO BE TESTED
- CATPH-D REQUIRES TPHC10C28 TO BE TESTED
- SW8021B REQUIRES ETBE TO BE TESTED
- SW8021B REQUIRES TAME TO BE TESTED
- SW8021B REQUIRES DIPE TO BE TESTED
- SW8021B REQUIRES TBA TO BE TESTED
- SW8021B REQUIRES DCA12 TO BE TESTED
- SW8021B REQUIRES EDB TO BE TESTED

LAB NOTE DATA QUALIFIERS

Y

QA/QC FOR 8021/8260 SERIES SAMPLES

TECHNICAL HOLDING TIME VIOLATIONS

0

METHOD HOLDING TIME VIOLATIONS

0

LAB BLANK DETECTIONS ABOVE REPORTING DETECTION LIMIT

0

LAB BLANK DETECTIONS

0

DO ALL BATCHES WITH THE 8021/8260 SERIES INCLUDE THE FOLLOWING?

- LAB METHOD BLANK Y
- MATRIX SPIKE Y
- MATRIX SPIKE DUPLICATE Y
- BLANK SPIKE Y
- SURROGATE SPIKE Y

WATER SAMPLES FOR 8021/8260 SERIES

MATRIX SPIKE / MATRIX SPIKE DUPLICATE(S) % RECOVERY BETWEEN 65-135%

Y

MATRIX SPIKE / MATRIX SPIKE DUPLICATE(S) RPD LESS THAN 30%

Y

SURROGATE SPIKES % RECOVERY BETWEEN 85-115%

Y

BLANK SPIKE / BLANK SPIKE DUPLICATES % RECOVERY BETWEEN 70-130%

Y

SOIL SAMPLES FOR 8021/8260 SERIES

MATRIX SPIKE / MATRIX SPIKE DUPLICATE(S) % RECOVERY BETWEEN 65-135%

n/a

MATRIX SPIKE / MATRIX SPIKE DUPLICATE(S) RPD LESS THAN 30%

n/a

SURROGATE SPIKES % RECOVERY BETWEEN 70-125%

n/a

BLANK SPIKE / BLANK SPIKE DUPLICATES % RECOVERY BETWEEN 70-130%

n/a

FIELD QC SAMPLES

SAMPLE	COLLECTED	DETECTIONS > REPDL
QCTB SAMPLES	N	0
QCEB SAMPLES	N	0
QCAB SAMPLES	N	0

APPENDIX D
HISTORICAL NATURAL ATTENUATION PARAMETER RESULTS

APPENDIX D
HISTORICAL NATURAL ATTENUATION ANALYTICAL RESULTS,
UST SITE 21578,
MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA

Well ID	Date Sampled	Alkalinity total as CaCO ₃ (mg/L)	Nitrate as N (mg/L)	Nitrite as N (mg/L)	Sulfate (mg/L)	Methane (mg/L)	Ethane (µg/L)	Ethyene (µg/L)	Manganese (mg/L)	Iron (mg/L)	Iron (II) (mg/L)	Total Sulfates (mg/L)
MW-01	3/5/1998	NA	16.8	0.02 U	136	NA	NA	NA	NA	NA	NA	NA
MW-01	4/27/1998	NA	16.2	0.02 U	146	NA	NA	NA	NA	NA	NA	NA
MW-01	2/21/2000	304	16.3	NA	204	3.0 U	NA	NA	NA	NA	NA	NA
MW-01	5/16/2000	307	NA	NA	212	3.0 U	NA	NA	NA	NA	NA	NA
MW-01	8/21/2000	290	NA	NA	200	1.0 U	NA	NA	NA	NA	NA	NA
MW-01	10/27/2000	307	NA	NA	182	1.0 U	NA	NA	NA	NA	NA	NA
MW-01	2/16/2001	290	NA	NA	217	1.0 U	NA	NA	NA	NA	NA	NA
MW-01	4/6/2001	394	NA	NA	219	1.0 U	NA	NA	NA	NA	NA	NA
MW-01	8/24/2001	310	NA	NA	212	0.36 J	NA	NA	NA	NA	NA	NA
MW-01	10/26/2001	317	NA	NA	240	1.0 U	NA	NA	NA	NA	NA	NA
MW-01	2/9/2002	NA	NA	NA	251.0	0.32 J	NA	NA	NA	NA	NA	NA
MW-01	4/6/2002	NA	NA	NA	234.0	0.53 J	NA	NA	NA	NA	NA	NA
MW-01	8/14/2002	357	11.0	0.1 U	290.0	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA
MW-01	10/18/2002	360	9.0	0.2 U	200.0	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA
MW-01	2/6/2003	358	9.4	0.2 U	240.0	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA
MW-02	3/5/1998	NA	3.11	0.02 U	142.0	NA	NA	NA	NA	NA	NA	NA
MW-02	4/27/1998	NA	5.87	0.02 U	110.0	NA	NA	NA	NA	NA	NA	NA
MW-02	8/4/1998	NA	6.1	0.02 U	100.0	3.0 U	3.0 U	3.0 U	NA	NA	NA	NA
MW-02	11/4/1998	NA	8.62	0.02 U	199.0	3.0 U	NA	NA	NA	NA	NA	NA
MW-02	2/24/1999	321	8.74	0.01 J	200.0	3 U	NA	NA	NA	NA	NA	NA
MW-02	4/28/1999	314	7.19	0.008 J	170.0	3 U	NA	NA	NA	NA	NA	NA
MW-02	8/9/1999	316	6.85	0.02 U	180.0	3 U	NA	NA	NA	NA	NA	NA
MW-02	10/25/1999	278	6.94	0.02 U	170.0	3 U	NA	NA	NA	NA	NA	NA
MW-02	2/21/2000	279	6.54	NA	NA	3.0 U	NA	NA	NA	NA	NA	NA
MW-02	5/16/2000	292	NA	NA	204.0	3.0 U	NA	NA	NA	NA	NA	NA
MW-02	5/16/2000	282	NA	NA	213.0	1.0 J	NA	NA	NA	NA	NA	NA
MW-02	8/21/2000	249	NA	NA	212.0	0.45	NA	NA	NA	NA	NA	NA
MW-02	10/27/2000	NA	NA	NA	190.0	NA	NA	NA	NA	NA	NA	NA
MW-02	2/16/2001	282	NA	NA	215.0	2.2	NA	NA	NA	NA	NA	NA
MW-02	4/6/2001	258	NA	NA	194.0	0.7 J	NA	NA	NA	NA	NA	NA
MW-02	8/24/2001	300	NA	NA	208.0	0.34 J	NA	NA	NA	NA	NA	NA
MW-02	10/26/2001	297	NA	NA	225.0	0.95 J	NA	NA	NA	NA	NA	NA
MW-02	2/9/2002	NA	NA	NA	206.0	0.55 J	NA	NA	NA	NA	NA	NA
MW-02	4/6/2002	NA	NA	NA	227.0	0.43 J	NA	NA	NA	NA	NA	NA
MW-02	8/14/2002	371	8.0	0.1 U	240.0	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA
MW-02	10/18/2002	289	6.0	0.1 U	190.0	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA
MW-02	2/6/2003	293	8.8	0.2 U	200.0	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA
MW-02	4/8/2003	238	5.0	0.1 U	190.0	1.0 U	1.0 U	1.0 U	0.15	0.84	NA	0.05 U
MW-02	10/8/2003	267	6.5	0.1 U	230.0	1.0 U	1.0 U	1.0 U	0.01	0.05 U	0.1 U	0.05 U
MW-02	4/13/2004	290	4.4	0.1 U	180.0	1.0 U	1.0 U	1.0 U	0.02	0.1 U	0.1 U	0.05 U
MW-02	10/5/2004	283	4.6	0.1 U	220.0	0.87 U	1.7 U	1.8 U	0.02	0.01 U	0.5 U	0.1 U
MW-02	8/10/2005	280	4.0	0.1 U	170.0	1.0 U	1.0 U	1.0 U	0.031	0.1 U	0.1 U	0.05 U

APPENDIX D
HISTORICAL NATURAL ATTENUATION ANALYTICAL RESULTS,
UST SITE 21578,
MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA

Well ID	Date Sampled	Alkalinity total as CaCO ₃ (mg/L)	Nitrate as N (mg/L)	Nitrite as N (mg/L)	Sulfate (mg/L)	Methane (mg/L)	Ethane (µg/L)	Ethyene (µg/L)	Manganese (mg/L)	Iron (mg/L)	Iron (II) (mg/L)	Total Sulfates (mg/L)
MW-04	10/26/2001	278	NA	NA	188.0	0.9 J	NA	NA	NA	NA	NA	NA
MW-04	2/9/2002	NA	NA	NA	171.0	0.49 J	NA	NA	NA	NA	NA	NA
MW-04	4/6/2002	NA	NA	NA	170.0	0.75 J	NA	NA	NA	NA	NA	NA
MW-04	8/13/2002	278	4.9	0.2 U	170.0	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA
MW-04	10/17/2002	300	4.0	0.1 U	200.0	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA
MW-04	2/5/2003	302	4.0	0.2 U	190.0	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA
MW-04	4/8/2003	313	2.8	0.2 U	190.0	1.0 U	1.0 U	1.0 U	0.19	0.01 U	NA	0.05 U
MW-04	10/8/2003	298	3.3	0.1 U	190.0	6.9	1.0 U	1.0 U	0.14	0.05 U	0.1 U	0.05 U
MW-04	4/13/2004	250	3.9	0.1 U	95.0	1.0 U	1.0 U	1.0 U	0.005 U	0.1 U	0.1 U	0.05 U
MW-04	10/6/2004	290	5.1	0.1 U	180.0	0.87 U	1.7 U	1.8 U	0.06	0.01 U	0.5 U	0.1 U
MW-04	8/10/2005	300	3.4	0.1 U	140.0	56.2	1.0 U	1.0 U	0.0751	0.1 U	0.1 U	0.05 U
OW-01	3/6/1998	NA	1.2	0.16	320.0	NA	NA	NA	NA	NA	NA	NA
OW-01	4/27/1998	NA	0.4	0.02 U	316.0	NA	NA	NA	NA	NA	NA	NA
OW-01	11/5/1998	NA	0.1 U	0.02 U	61.0	3.0 U	NA	NA	NA	NA	NA	NA
OW-01	2/21/2000	384	0.79	NA	190.0	640	NA	NA	NA	NA	NA	NA
OW-01	5/16/2000	393	NA	NA	199.0	910	NA	NA	NA	NA	NA	NA
OW-01	8/21/2000	344	NA	NA	185.0	630	NA	NA	NA	NA	NA	NA
OW-01	10/27/2000	345	NA	NA	181.0	910	NA	NA	NA	NA	NA	NA
OW-01	2/16/2001	358	NA	NA	192.0	300	NA	NA	NA	NA	NA	NA
OW-01	4/6/2001	446	NA	NA	116.0	6300	NA	NA	NA	NA	NA	NA
OW-01	8/24/2001	539	NA	NA	90.0	1700	NA	NA	NA	NA	NA	NA
OW-01	10/26/2001	529	NA	NA	75.9	2000	NA	NA	NA	NA	NA	NA
OW-01	2/9/2002	NA	NA	NA	69.3	680	NA	NA	NA	NA	NA	NA
OW-01	4/6/2002	NA	NA	NA	79.0	820	NA	NA	NA	NA	NA	NA
OW-01	8/15/2002	357	2.9 H	0.1 J	210.0	19.6	1.0 U	1.0 U	NA	NA	NA	NA
OW-01	4/9/2003	490	0.2	0.1 J	160.0	708	1.0 U	1.0 U	4.00	4.92	NA	0.05 U
OW-01	10/9/2003	578	0.5 U	0.5 U	140.0	NA	NA	NA	6.32	7.50	7.50	0.05 U
OW-01	10/6/2004	535	0.2 U	0.1 U	94.0	1300	1.7 U	1.8 U	4.22	3.11	1.1	0.1 U
OW-01	8/11/2005	580	0.1 U	0.1 U	54.0	7340	1.0 U	1.0 U	10.4	18.3	14	1.3
OW-02	3/6/1998	NA	1.2	0.04	206.0	NA	NA	NA	NA	NA	NA	NA
OW-02	4/27/1998	NA	4.31	0.02 U	181.0	NA	NA	NA	NA	NA	NA	NA
OW-02	11/5/1998	NA	1.2	2.44	191.0	3.0 U	NA	NA	NA	NA	NA	NA
OW-02	2/21/2000	279	8.06	NA	240.0	3.0 U	NA	NA	NA	NA	NA	NA
OW-02	5/16/2000	284	NA	NA	206.0	3.0 U	NA	NA	NA	NA	NA	NA
OW-02	8/21/2000	256	NA	NA	204.0	65.0	NA	NA	NA	NA	NA	NA
OW-02	10/27/2000	259	NA	NA	172.0	33.0	NA	NA	NA	NA	NA	NA
OW-02	2/16/2001	244	NA	NA	191.0	9.9	NA	NA	NA	NA	NA	NA
OW-02	4/6/2001	224	NA	NA	167.0	430	NA	NA	NA	NA	NA	NA
OW-02	8/24/2001	287	NA	NA	115.0	1600	NA	NA	NA	NA	NA	NA
OW-02	10/26/2001	273	NA	NA	126.0	540	NA	NA	NA	NA	NA	NA
OW-02	2/9/2002	NA	NA	NA	141.0	170	NA	NA	NA	NA	NA	NA
OW-02	4/6/2002	NA	NA	NA	154.0	130	NA	NA	NA	NA	NA	NA
OW-02	8/15/2002	271	4.5 J	0.1 J	160.0	31.8	1 U	1 U	NA	NA	NA	NA

APPENDIX D
HISTORICAL NATURAL ATTENUATION ANALYTICAL RESULTS,
UST SITE 21578,
MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA

Well ID	Date Sampled	Alkalinity total as CaCO ₃ (mg/L)	Nitrate as N (mg/L)	Nitrite as N (mg/L)	Sulfate (mg/L)	Methane (mg/L)	Ethane (µg/L)	Ethyene (µg/L)	Manganese (mg/L)	Iron (mg/L)	Iron (II) (mg/L)	Total Sulfates (mg/L)
OW-03	3/5/1998	NA	2.54	0.02 U	218.0	NA	NA	NA	NA	NA	NA	NA
OW-03	4/27/1998	NA	4.69	0.02 U	215.0	NA	NA	NA	NA	NA	NA	NA
OW-03	8/5/1998	NA	2.1	0.02 U	230.0	3.0 U	3.0 U	3.0 U	NA	NA	NA	NA
OW-03	11/5/1998	NA	2.0	0.02 U	229.0	3.0 U	NA	NA	NA	NA	NA	NA
OW-03	2/24/1999	408	0.56	0.01 J	180.0	220	NA	NA	NA	NA	NA	NA
OW-03	4/28/1999	429	0.2	0.652	180.0	1100	NA	NA	NA	NA	NA	NA
OW-03	4/28/1999	349	0.1 U	0.02	180.0	760	NA	NA	NA	NA	NA	NA
OW-03	8/9/1999	304	1.9	1.46	190.0	12.0	NA	NA	NA	NA	NA	NA
OW-03	10/25/1999	305	3.51	1.06	170.0	10.0	NA	NA	NA	NA	NA	NA
OW-03	10/25/1999	325	5.70	0.34	167.0	32.0	NA	NA	NA	NA	NA	NA
OW-03	2/21/2000	308	5.23	NA	120.0	3.0 U	NA	NA	NA	NA	NA	NA
OW-03	5/16/2000	285	NA	NA	149.0	3.0 U	NA	NA	NA	NA	NA	NA
OW-03	8/21/2000	241	NA	NA	128.0	1.0 U	NA	NA	NA	NA	NA	NA
OW-03	10/27/2000	261	NA	NA	125.0	5.7	NA	NA	NA	NA	NA	NA
OW-03	2/16/2001	353	NA	NA	73.0	8.4	NA	NA	NA	NA	NA	NA
OW-03	4/6/2001	276	NA	NA	130.0	47.0	NA	NA	NA	NA	NA	NA
OW-03	8/24/2001	343	NA	NA	127.0	260	NA	NA	NA	NA	NA	NA
OW-03	10/26/2001	297	NA	NA	156.0	51.0	NA	NA	NA	NA	NA	NA
OW-03	2/9/2002	NA	NA	NA	171.0	610	NA	NA	NA	NA	NA	NA
OW-03	4/6/2002	NA	NA	NA	165.0	1400	NA	NA	NA	NA	NA	NA
OW-03	8/15/2002	284	3.8 J	0.1 J	140.0	1270	1.0 U	1.0 U	NA	NA	NA	NA
RW-01	3/5/1998	NA	11.6	0.02 U	225.0	NA	NA	NA	NA	NA	NA	NA
RW-01	4/27/1998	NA	6.69	0.02 U	179.0	NA	NA	NA	NA	NA	NA	NA
RW-01	8/5/1998	NA	8.4	0.058	200.0	3.0 U	3.0 U	3.0 U	NA	NA	NA	NA
RW-01	11/5/1998	NA	8.19	0.93	199.0	330	NA	NA	NA	NA	NA	NA
RW-01	2/21/2000	295	0.32	NA	68.0	2640	NA	NA	NA	NA	NA	NA
RW-01	5/16/2000	268	NA	NA	258.0	1000	NA	NA	NA	NA	NA	NA
RW-01	8/21/2000	280	NA	NA	229.0	3300	NA	NA	NA	NA	NA	NA
RW-01	10/27/2000	276	NA	NA	208.0	3200	NA	NA	NA	NA	NA	NA
RW-01	2/16/2001	249	NA	NA	207.0	760	NA	NA	NA	NA	NA	NA
RW-01	4/6/2001	306	NA	NA	238.0	1700	NA	NA	NA	NA	NA	NA
RW-01	8/24/2001	247	NA	NA	243.0	1400	NA	NA	NA	NA	NA	NA
RW-01	10/26/2001	263	NA	NA	258.0	1200	NA	NA	NA	NA	NA	NA
RW-01	2/9/2002	NA	NA	NA	184.0	1100	NA	NA	NA	NA	NA	NA
RW-01	4/6/2002	NA	NA	NA	231.0	1500	NA	NA	NA	NA	NA	NA
RW-01	8/15/2002	256	4.0 J	0.1 J	230.0	250	1.0 U	1.0 U	NA	NA	NA	NA

APPENDIX D
HISTORICAL NATURAL ATTENUATION ANALYTICAL RESULTS,
UST SITE 21578,
MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA

Well ID	Date Sampled	Alkalinity total as CaCO ₃ (mg/L)	Nitrate as N (mg/L)	Nitrite as N (mg/L)	Sulfate (mg/L)	Methane (mg/L)	Ethane (µg/L)	Ethyene (µg/L)	Manganese (mg/L)	Iron (mg/L)	Iron (II) (mg/L)	Total Sulfates (mg/L)
RW-02	11/5/1998	NA	0.1	0.02 U	489.0	13.0	NA	NA	NA	NA	NA	NA
RW-02	2/16/2001	280	NA	NA	242.0	640	NA	NA	NA	NA	NA	NA
RW-02	4/6/2001	527	NA	NA	244.0	2700	NA	NA	NA	NA	NA	NA
RW-02	8/24/2001	555	NA	NA	153.0	2200	NA	NA	NA	NA	NA	NA
RW-02	10/26/2001	397	NA	NA	172.0	3300	NA	NA	NA	NA	NA	NA
RW-02	2/9/2002	NA	NA	NA	239.0	840	NA	NA	NA	NA	NA	NA
RW-02	4/6/2002	NA	NA	NA	137.0	2700	NA	NA	NA	NA	NA	NA
RW-02	8/15/2002	740	0.6 J	0.1 J	71.0	2550	1 U	1 U	NA	NA	NA	NA
RW-03	11/4/1998	NA	5.28	0.02 U	147.0	3.0 U	NA	NA	NA	NA	NA	NA
RW-03	2/24/1999	295	4.03	0.068	160.0	7.3	NA	NA	NA	NA	NA	NA
RW-03	4/28/1999	303	5.10	0.02 U	190.0	3 U	NA	NA	NA	NA	NA	NA
RW-03	8/9/1999	294	4.64	0.02 U	170.0	3 U	NA	NA	NA	NA	NA	NA
RW-03	8/9/1999	328	5.89	0.02 U	170.0	3 U	NA	NA	NA	NA	NA	NA
RW-03	10/25/1999	281	6.71	0.02 U	160.0	3 U	NA	NA	NA	NA	NA	NA
RW-03	2/21/2000	241	6.87	NA	108.0	3.0 U	NA	NA	NA	NA	NA	NA
RW-03	5/16/2000	246	NA	NA	108.0	3.0 U	NA	NA	NA	NA	NA	NA
RW-03	8/21/2000	220	NA	NA	130.0	1.0 U	NA	NA	NA	NA	NA	NA
RW-03	10/27/2000	227	NA	NA	104.0	0.4 J	NA	NA	NA	NA	NA	NA
RW-03	2/16/2001	242	NA	NA	127.0	0.45 J	NA	NA	NA	NA	NA	NA
RW-03	4/6/2001	253	NA	NA	114.0	0.45 J	NA	NA	NA	NA	NA	NA
RW-03	8/24/2001	234	NA	NA	124.0	0.34 J	NA	NA	NA	NA	NA	NA
RW-03	10/26/2001	249	NA	NA	133.0	0.65 J	NA	NA	NA	NA	NA	NA
RW-03	2/9/2002	NA	NA	NA	145.0	1.0 U	NA	NA	NA	NA	NA	NA
RW-03	4/6/2002	NA	NA	NA	137.0	0.41 J	NA	NA	NA	NA	NA	NA
RW-03	8/14/2002	210	9.0	0.1 U	180.0	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA
RW-03	10/17/2002	222	7.0	0.1 U	130.0	1.0 U	1.0	1.0 U	NA	NA	NA	NA
RW-03	2/6/2003	219	8.0	0.1 U	130.0	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA
RW-03	4/9/2003	251	5.0	0.1 U	130.0	1.0 U	1.0 U	1.0 U	0.01 U	0.01 U	NA	0.05 U
RW-03	10/9/2003	204	6.8	0.1 U	160.0	1.0 U	1.0 U	1.0 U	0.01 U	0.10 U	0.1 U	0.05 U
RW-03	4/14/2004	200	7.3	0.1 U	170.0	1.0 U	1.0 U	1.0 U	0.01 U	0.10 U	0.1 U	NA
RW-03	10/6/2004	215	8.1	0.1 U	180.0	0.87 U	1.7 U	1.8 U	0.01 U	0.01 U	0.5 U	0.10 U
RW-03	8/10/2005	360	4.9	0.1 U	150.0	1.0 U	1.0 U	1.0 U	0.005 U	0.1 U	0.1 U	0.05 U
RW-04	11/4/1998	NA	2.69	0.02 U	228.0	3 U	NA	NA	NA	NA	NA	NA
RW-04	2/24/1999	272	5.71	0.750	230.0	720	NA	NA	NA	NA	NA	NA
RW-04	4/28/1999	278	3.69	0.802	18.0	3 U	NA	NA	NA	NA	NA	NA
RW-04	8/9/1999	297	5.26	0.17	220.0	1400	NA	NA	NA	NA	NA	NA
RW-04	10/25/1999	237	1.3	0.02 U	230.0	1400	NA	NA	NA	NA	NA	NA
RW-04	2/21/2000	422	1.1	NA	240.0	11.0	NA	NA	NA	NA	NA	NA
RW-04	5/16/2000	402	NA	NA	257.0	5.0	NA	NA	NA	NA	NA	NA
RW-04	8/21/2000	391	NA	NA	243.0	2.3	NA	NA	NA	NA	NA	NA
RW-04	10/27/2000	429	NA	NA	203.0	2.8	NA	NA	NA	NA	NA	NA

APPENDIX D
HISTORICAL NATURAL ATTENUATION ANALYTICAL RESULTS,
UST SITE 21578,
MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA

Well ID	Date Sampled	Alkalinity total as CaCO ₃ (mg/L)	Nitrate as N (mg/L)	Nitrite as N (mg/L)	Sulfate (mg/L)	Methane (mg/L)	Ethane (µg/L)	Ethyene (µg/L)	Manganese (mg/L)	Iron (mg/L)	Iron (II) (mg/L)	Total Sulfates (mg/L)
RW-04	2/16/2001	408	NA	NA	203.0	6.0	NA	NA	NA	NA	NA	NA
RW-04	4/6/2001	318	NA	NA	217.0	120.0	NA	NA	NA	NA	NA	NA
RW-04	8/24/2001	356	NA	NA	193.0	19.0	NA	NA	NA	NA	NA	NA
RW-04	10/26/2001	390	NA	NA	229.0	4.6	NA	NA	NA	NA	NA	NA
RW-04	2/9/2002	NA	NA	NA	211.0	2.9	NA	NA	NA	NA	NA	NA
RW-04	4/6/2002	NA	NA	NA	208.0	24.0	NA	NA	NA	NA	NA	NA
RW-04	8/13/2002	381	1.1	0.2 U	210.0	4.65	1.0 U	1.0 U	NA	NA	NA	NA
RW-04	10/17/2002	369	2.4	0.1 U	230.0	8.64	1.0 U	1.0 U	NA	NA	NA	NA
RW-04	2/5/2003	338	1.7	0.2 U	160.0	21.2	1.0 U	1.0 U	NA	NA	NA	NA

Notes:

N = Nitrogen

NA = Not Analyzed

NS = Not Sampled

U = Not detected above Reporting limit

J = Estimated quantity

During the first two monitoring events samples were only analyzed for sulfate and methane

Wells containing free product were not monitored for natural attenuation parameters

Blank cells indicate that the parameter was not analyzed for or the data was not reported by the previous consultant

APPENDIX D
HISTORICAL NATURAL ATTENUATION ANALYTICAL RESULTS,
UST SITE 21578,
MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA

Well ID	Date Sampled	Alkalinity total as CaCO ₃ (mg/L)	Nitrate as N (mg/L)	Nitrite as N (mg/L)	Sulfate (mg/L)	Methane (mg/L)	Ethane (µg/L)	Ethyene (µg/L)	Manganese (mg/L)	Iron (mg/L)	Iron (II) (mg/L)	Total Sulfates (mg/L)
MW-03	3/5/1998	NA	0.1	0.02 U	136.0	NA	NA	NA	NA	NA	NA	NA
MW-03	4/27/1998	NA	3.71	0.02 U	131.0	NA	NA	NA	NA	NA	NA	NA
MW-03	8/5/1998	NA	3.0	0.02 U	120.0	NA	3.0 U	3.0 U	NA	NA	NA	NA
MW-03	11/4/1998	NA	4.46	0.02 U	135.0	3.0 U	NA	NA	NA	NA	NA	NA
MW-03	2/24/1999	240	4.71	0.02 J	130.0	3 U	NA	NA	NA	NA	NA	NA
MW-03	2/24/1999	188	3.52	0.02 U	120.0	3 U	NA	NA	NA	NA	NA	NA
MW-03	4/28/1999	234	3.40	0.02 U	128.0	3.0	NA	NA	NA	NA	NA	NA
MW-03	8/9/1999	226	3.18	0.02 U	130.0	6.0	NA	NA	NA	NA	NA	NA
MW-03	10/25/1999	190	4.03	0.01 J	130.0	3 U	NA	NA	NA	NA	NA	NA
MW-03	2/21/2000	249	2.92	NA	150.0	3.0 U	NA	NA	NA	NA	NA	NA
MW-03	5/16/2000	268	NA	NA	158.0	43.0	NA	NA	NA	NA	NA	NA
MW-03	8/21/2000	270	NA	NA	176.0	100.0	NA	NA	NA	NA	NA	NA
MW-03	10/27/2000	251	NA	NA	140.0	80.0	NA	NA	NA	NA	NA	NA
MW-03	2/16/2001	230	NA	NA	163.0	81.0	NA	NA	NA	NA	NA	NA
MW-03	4/6/2001	278	NA	NA	190.0	170.0	NA	NA	NA	NA	NA	NA
MW-03	8/24/2001	259	NA	NA	160.0	72.0	NA	NA	NA	NA	NA	NA
MW-03	10/26/2001	278	NA	NA	174.0	110.0	NA	NA	NA	NA	NA	NA
MW-03	2/9/2002	NA	NA	NA	179.0	66.0	NA	NA	NA	NA	NA	NA
MW-03	4/6/2002	NA	NA	NA	152.0	150.0	NA	NA	NA	NA	NA	NA
MW-03	8/13/2002	220	2.4	0.2 U	130.0	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA
MW-03	10/17/2002	203	3.4	0.1 U	120.0	1.71 U	1.0 U	1.0 U	NA	NA	NA	NA
MW-03	2/5/2003	211	2.7	0.2 U	100.0	7.22	1.0 U	1.0 U	NA	NA	NA	NA
MW-03	4/8/2003	218	2.3	0.2 U	110.0	6.79	1.0 U	1.0 U	0.01	0.01 U	NA	0.1 U
MW-03	10/9/2003	244	2.1	0.2 U	150.0	8.33	1.0 U	1.0 U	0.02	0.05 U	0.1 U	0.1 U
MW-03	4/13/2004	200	2.7	0.1 U	96.0	1.24	1.0 U	1.0 U	0.01	0.10 U	0.1 U	0.1 U
MW-03	10/6/2004	338	2.3	0.1 U	140.0	10	1.7 U	1.8 U	0.01	0.01 U	0.5 U	0.1 U
MW-03	8/11/2005	180	2.9	0.1 U	99.0	1.0 U	1.0 U	0.005 U	0.232	0.1 U	0.05 U	
MW-04	3/5/1998	NA	0.95	0.02 U	105.0	NA	NA	NA	NA	NA	NA	NA
MW-04	4/27/1998	NA	4.02	0.02 U	92.0	NA	NA	NA	NA	NA	NA	NA
MW-04	8/5/1998	NA	3.9	0.039	150.0	NA	3.0 U	3.0 U	NA	NA	NA	NA
MW-04	11/4/1998	NA	5.12	0.045	206.0	3.0 U	NA	NA	NA	NA	NA	NA
MW-04	2/24/1999	242	3.78	0.01 J	110.0	3 U	NA	NA	NA	NA	NA	NA
MW-04	4/28/1999	268	5.09	0.02 U	150.0	3 U	NA	NA	NA	NA	NA	NA
MW-04	8/9/1999	250	5.56	0.02 U	160.0	3.0	NA	NA	NA	NA	NA	NA
MW-04	10/25/1999	518	0.1 U	0.03	89.0	180 J	NA	NA	NA	NA	NA	NA
MW-04	2/21/2000	253	4.9	NA	160.0	3.0 U	NA	NA	NA	NA	NA	NA
MW-04	5/16/2000	268	NA	NA	200.0	3.0 U	NA	NA	NA	NA	NA	NA
MW-04	8/21/2000	251	NA	NA	192.0	1.2	NA	NA	NA	NA	NA	NA
MW-04	10/27/2000	232	NA	NA	119.0	0.48 J	NA	NA	NA	NA	NA	NA
MW-04	2/16/2001	237	NA	NA	95.0	0.75 J	NA	NA	NA	NA	NA	NA
MW-04	4/6/2001	234	NA	NA	112.0	0.75 J	NA	NA	NA	NA	NA	NA
MW-04	8/24/2001	285	NA	NA	145.0	1.2	NA	NA	NA	NA	NA	NA

APPENDIX E
WASTE ACCEPTANCE FORM

**ENVIRONMENTAL DEPARTMENT TREATMENT FACILITIES
NAVY PUBLIC WORKS CENTER, SAN DIEGO**

WASTE ACCEPTANCE FORM

5277

BULK CONTROL NO:

CUSTOMER USE ONLY:

TRACK NO: _____

DATE: 10/4/2005

TIME: _____

ACTIVITY NAME: PWC 980/ANTEON

BASE: CAMP PENDLETON

BUILDING/LOCATION: AREA 21

PHONE NUMBER: 619-571-4178

JOB ORDER NUMBER: 113623302008

UIC: N63387

WASTE DESCRIPTION: GROUNDWATER

NAD USE ONLY

BOWSER ID: _____

TANK NO: _____

SHOP NO: _____

PROCESS GENERATING WASTE: _____

SOURCE CODE: A99

FORM CODE: B205

APPLICABLE WASTE CODES: NONHAZARDOUS: _____ EPA: _____ CALIFORNIA: _____

CONTAMINANTS AND CONCENTRATIONS (MG/L): 100% GROUNDWATER

WASTE PROFILE NUMBER: _____

VOLUME (GALLONS): 40 gal

LIQUID LEVEL

CODE 932 USE ONLY: NW21

FACILITY: IWTP NI OWTP X NS#1 OWTP _____ NS#2 OWTP _____ SUBASE OWTP _____ NAB OWTP _____

Manifest#: N/A EPAGENID: _____ NON_HAZ _____ RECYCLE _____

TIME ARRIVED: 1030 PUMP START TIME: 1045 PUMP END TIME: 1100

PHYSICAL STATE: Liquid SLUDGE IN BOWSER: YES NO X VOLUME (GALLONS): 40

FIELD TEST RESULTS (MG/L):

Cr. (VI) _____ CLOR-D-TECT _____ OTHER _____

Total Cr _____ HYDROCLOR-Q _____

CN _____

PH: _____ TREATMENT GROUP: 1 - OW _____ 2 - CONTAMINATED OW/GIW _____
 3 - CHROME _____ 4 - MIXED METALS _____
 5 - CYANIDE _____ 6 - PHENOL _____ 7 - SPECIAL _____

TRACKING NUMBER: 05210009

TREATMENT TANK: T-4A BATCH NUMBER: _____

TREATMENT CODES (CHECK ALL APPLICABLE):

T22-CHEMICAL OXIDATION _____ T23-CHEMICAL PRECIPITATION _____ T24-CHEMICAL REDUCTION _____ T27-CYANIDE DESTRUCTN _____
 T31-NEUTRALIZATION _____ T38-DECANTING X T42-FLOTATION X T44-SEDIMENTATION X

ACTIVITY REPRESENTATIVE

NAME

CODE 920 REPRESENTATIVE

NAME

SIGNATURE AND DATE

SIGNATURE AND DATE

10-4-05

10-4-05